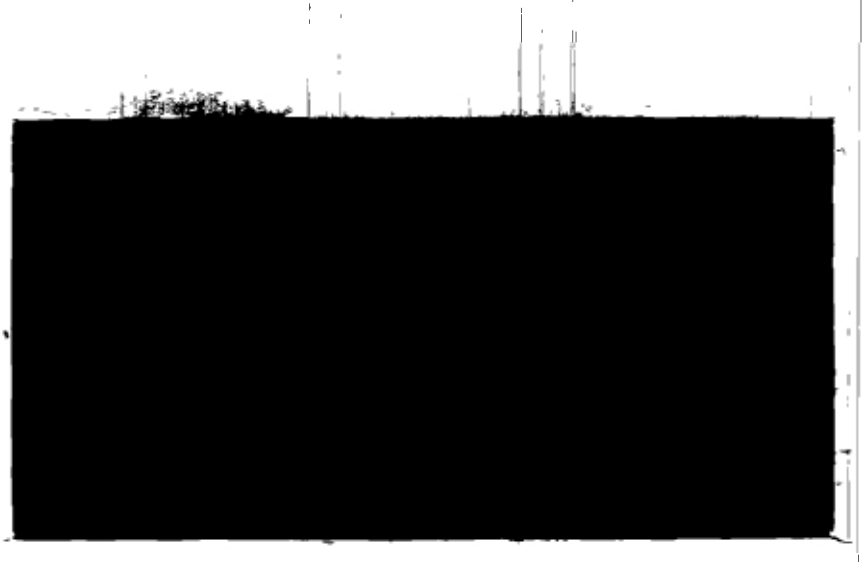

GETTING WELL,

GETTING BETTER

"results of a base-line survey"
executed in the North-Western
Province of Zambia, Solwezi and
Kasempa District.
January - July 1989.

Solwezi, October 1989

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- Information paper No. 1-

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They have tried to use every means to visit all the finished wells. The long distances, combined with the rains and the dispersion of the well-users at their cultivation fields made the work not easy.

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List of Abbreviations

BLS = Baseline Survey

Ch. = Chapter

DCP = Drought Contingency Project

deep = deepening of wells

DSD = Department of Social Development

DWA = Department of Water Affairs

LO's = Liaison Officers

MoH = Ministry of Health

new = newly to be constructed wells

No. = number

PEA = Participation & Education Adviser

PEP = Participation and Education Programme

Q = questionnaire

RWHP = Rural Water for Health Project

rep = repair of wells

sqkm = square kilometre

VWC = Village Water Committee

1. Introduction

1.1 Short Summary of the Project

The Rural Water for Health Project is a follow up of the Drought Contingency Project. Aim of the Project for phase I (1988 - 1991) is the construction of 126 wells in Kasempa and Solwezi Districts. The wells are constructed with self-help contribution of the communities. They are designed with a windlass, a chain and a bucket, a simple technology, to minimize maintenance requirements for the users; to enable the users to maintain their own well. A wash basin is constructed near the well for laundry purposes to prevent contamination of the well.
The project has staff seconded from the Department of Water Affairs, Ministry of Health and Department of Social Development. It offers the villages materials and technical assistance for the construction of a well.
Before, during and after construction, a Participation & Education Programme is executed to promote community participation in construction and maintenance activities to ensure the sustainability of the wells.
At the same time health education aims at an improved use of protected wells, the handling of the water and the hygienic situation in the villages. This is in order to achieve a better health situation of the people served with a well.
The well- users are living mostly with the extended family in small villages. Those villages are very much scattered over the districts.

1.2 Reasons for a base-line survey

This base-line survey (BLS) has been carried out, to get information on the usage of the wells constructed within the framework of the Rural Water for Health Project (RWHP). We also intended to gather information on the hygienic habits of the users and on their knowledge on hygienic water-use.
This information is to serve as the basis for the development of the participation and education programme (PEP).
Another reason for it was the need to get a complete picture of the condition of the completed wells.

Through the survey the project's activities (construction-, as well as education activities) can be linked up with the actual knowledge and capabilities of the villagers.
Furthermore the results of the survey can form a basis for future monitoring and evaluation activities on the project's impact.

An additional point of interest was that the newly seconded staff had to be worked into their job. The execution of the survey contributed to a smooth introduction of the new staff to the project. They became familiar with the local habits, language and the project's approach of community participation.

1.3 Set up of the Base-line Survey

The survey was carried out through three questionnaires. It was planned to interview communities around 120 wells, constructed before 1989 in Kasempa and Solwezi Districts.
Attention was given to the current organization around a well with special focus on the maintenance capabilities of the communities.
The selection of a site for a well was surveyed and the effects of the site on the usage of a well.
The survey was executed from January 1989 till April 1989. The Community- and Health-Advisers of the project executed the actual interviews. The Liaison Officers (LO's) from the Ministry of Health (MoH) and the Department of Social Development (DSD) and the Participation & Education Adviser (PEA) first worked out the questionnaires on mastersheets and interpreted the outcome.
During their fieldvisits the extension workers combined the survey with education.

1.4 Structure of the Report

In Chapter 2 the research methods will be explained.
The actual findings of the survey are described in the following chapters.
Chapter 3 covers the population-data and well-use; the people in the project area, numbers of people interviewed and their well-use.
In Chapter 4 we describe knowledge and practises related to water and sanitation and identify and compare different users-groups.
Chapter 5 is on the actual condition of the wells, the care and maintenance executed and the problems encountered. The role of the project is evaluated and people's ideas on fundraising are described.
Then in Chapter 6 the organization of the communities around the wells is described by reviewing the tasks and functioning of the Village Water Committees (VWC).

1.5 Use of survey results

All chapters are terminated with a concluding sub-chapter on how the gained information can be used for the programme development. These recommendations will be incorporated in the Participation and Education Programme and tried out in the field.
Some technical outcomings can serve the construction staff in improving the design of the well and in setting up a maintenance system.

Both factors will contribute to the sustainability of project's outputs and therefore to improved living conditions of the target group.

2. Organization and Methods of Investigation

2.1 Research Method

The survey was set-up with questionnaires on three different levels:

I. Well organization level:
The local leaders around a well were interviewed or representatives of the VWC, where it was established.

II. Users-group-level:
Representatives of a village, a school or health centre were interviewed.

III. Individual-level:
At least four people per well were interviewed i.e.
1. a local leader or a VWC member
2. a woman using the well
3. a woman not using the well
4. a man using the well

Where the well was situated near a school, we interviewed also:
5. a teacher
6. a pupil, grade 4 or 5

Where the well was at or near a health centre we interviewed:
7. a Rural Health Worker
8. where there was a Community Health Worker living near by a well, this person was also interviewed.

The subjects covered by the three questionnaires were different.
QI concentrated on the organization around a well and the condition of the well.
QII was directed to the number of users and the sorts of users.
QIII was directed towards the individual well users, reasons for using (or not using) the well water, hygienic habits and knowledge.

The questionnaires were made on the basis of a problem analysis within a workshop for the Participation & Education Programme, which took place in November 1988. The English version was tried out by the extension staff in both districts and adaptations were made. This was translated into Kaonde language by an outsider of the project.
During the interviews, the questions were asked in Kaonde, the answers had to be written down in English. This might have resulted in cultural specific answers being changed in the translation.

2.2 Organization and Timing

The Community and Health Advisers went as a team of three persons into the villages to do the interviews. The LO's together with the PEA supervised the fieldwork and worked out the results on mastersheets.

For every well the interviewers first made appointments with the local leaders. For far away wells this took one day, the rest of the week then was spent on visiting the wells. Every well visit took about one day. Some wells in Kasempa District were deserted because the users had shifted for agricultural purposes to their fields. Therefore they were not interviewed. Two wells in Solwezi District could not be visited, because of security reasons.

First the Local Leaders or the members of the VWC's were interviewed, using questionnaire I; This took about one hour. Then these people were asked which individuals could be interviewed for questionnaires II and III. This took about two hours and was done at the village, school or health centre of the interviewee. When this was finished, the interviewers met all the well users and explained why they carried out the survey. Then they gave education on the organization around a well, how to raise funds for repairs and how to use the well water in a hygienic way. They answered questions that came up during the interviews and education. This took about another hour.

Much time was spent on travelling to the villages. At the beginning the scarce transport was hampering the execution of the survey. The communities that practised shifting cultivation had to be visited either early in the morning or in the late afternoon, for the rest of the day the people were working in the fields. They are living in temporary villages far away from the main roads, so the interviewers had to walk long distances to find them. It was difficult to finish the whole programme in early morning hours or afternoon hours. Some time had to be spent on waiting till the people came back from their fields.

The mastersheets were combined, so that all results are available per district. The analysis of the results and the interpretation was done by the PEA and the LO's. This took another 14 days. And finally writing of this report took 2 weeks.

The tables given in the report are often answers or opinions of people. To compare the answers of different users groups with each other, it was necessary to represent them in percentages. These percentages are derived from the number of respondents per users group. The total number of respondents per users group is 100%.

2.3 Experiences with the questionnaires

The questionnaires included open and closed questions. Open questions sometimes fed us with new informations. But compared to the work to put such answers on paper, it was not very effective. Questions on functioning of the project were merely answered in a positive way. The cultural attitude of the people is to be polite and not so critical, so most people were reluctant to reveal their negative opinions as politeness is regarded to be more important

than frankness. This counts for the interviewees as well as for the interviewers. Sometimes we got the impression that people were afraid to tell the truth, out of fear for their position or of loosing the well.
Questions on hygienic habits were sometimes too personal resulting in vague answers. Therefore later it was decided to try to find these answers in an indirect way or by observation and if this was not possible to leave them out.
QIII should have been answered in relation to the function of a person. E.g. a teacher should have answered on water use etc. for the school. This was not done, everybody answered according to their home situation. It was also noticed that certain interviewers got the same answers on specific questions from different persons interviewed, so their personal influence on the answers must be kept in mind.
The concrete questions were more easy to work out than the questions on hygienic habits in general. The questions which had the possible answers formulated on the questionnaire also worked out nicely. Only the answers that did not fit under the pre-formulated answers and should have been noted under "other, namely....." were seldom noted down.

The fact that all wells were being included in the survey provided an overall picture of the situation of finished wells in general. For eventual future follow-up surveys it does not seem to be necessary to do it as extensive as this first one. As a base-line survey this method worked out well. In the future we will take a sample and spend more time in the selected villages and concentrate on certain subjects through observations and discussions, more than through interviews with questionnaires.

3. Population and well-use

3.1 Introduction

Kasempa and Solwezi Districts are two of the six Districts of North-Western Province of Zambia. In 1986 Solwezi had 125.900 inhabitants on 29.690 sqkm, that is 4.2 persons per sqkm. Kasempa had 34.000 people on 21.100 sqkm, that is 1.6 persons per sqkm.
The annual average growth rate till 1990 for NW Province is 3.1%, this is 0,65% lower than the national average growth rate)*.

The main source of income is subsistence farming with some cash earning activities like cash crop farming (maize and beans), fishing, hunting, trading and beer brewing.
In 1980 some 30% of the households were female headed caused by the migration of male labourers to the mines. The common water sources are rivers, dambo's (depressions in the landscape which serve as water storage), lakes, and hand-dug shallow wells (ca 1 m deep and 50 cm wide). Most of them are drying up during the dry season.

People practice shifting cultivation, they go to the fields mostly far away from their homes and there they live during the cultivation period. After planting, they return to their homes. During the growing period many go again to live at the fields to protect the crops from birds and other animals.
The periods people shift are generally from November till March (cultivating) and from April to July (protecting and harvesting crops). This shifting cultivation determines the way of living of people to a great extend. It also influences the usage of the wells, because when people shift, the villages, included the wells are almost deserted. When shifting, they live in temporary houses with low hygienic standard and they are difficult to trace for any sort of extension programme.

Another aspect related to the development potential of the rural population is the historical determined expectation of the Government being the supplier of all services, for free. In the prosperous years between 1960 and 1970 the Government promised and indeed rendered many services to the population without the necessity of a contribution from the users.
It is clear that the economical decline of Zambia in the last years, makes it impossible for the Government to continue these services, which requires a changing attitude from the users.

)* Statistical Handbook No II North-Western Province, Provincial Planning Unit, Solwezi, January 1988.

Conclusions

3.1.1 Shifting cultivation practises influence well-use and education possibilities negatively.

3.1.2 Zambia's development seemed for some time the main responsibility of the Government. Although it is clear that it can not be only her responsibility, many people are not yet used to take up their own responsibility. This might hamper a project like the RWHP, that is based on self-help.

3.2 The occurance of water related diseases

According to the statistics of the Ministry of Health, in 1987 on the numbers of patients visiting the hospitals and rural health centres in Solwezi- and Kasempa Districts, the main diseases were diarrhoea and malaria.
The following diseases were veneral disease (V.D.), Bilharzia (B), Measles (M) and Whooping Cough (W.C).
To give an impression on the relation between these two diseases and the others, here under the data are given:

No. of people visiting the Rural Health Centres in 1987 (table 1)

	Diarrhoea	Malaria	V.D., B. , M. and W.C.
Solwezi	39,882	30,194	9,731
Kasempa	9,084	11,308	1,901

The most prevalent diseases are diarrhoea and malaria, about 1/3 of the whole population suffers from diarrhoea and another 1/3 from malaria.
These data are confirmed by the information gained at the rural health centres (R.H.C.'s) in Kasempa District, served with a protected well. Through the survey we got their numbers of patients for 1988.
Main disease was malaria (4,565), second diarrhoea (3,092), third eye diseases (1,596), fourth sleeping sickness (825), fifth URTI (Ulphal Monotary Respiratory Transmitted Infections) (205), sixth bilharzia (155), seventh scabies (135).
Except for the URTI all other diseases mentioned are water related. Either because the life cycle of the carriers goes via water, or the infection goes via water, or because of hygienic habits in which the quantity of water used, influences the occurrence of diseases.

Conclusions:

3.1.3 The most common diseases in Solwezi and Kasempa District are diarrhoea and malaria.

3.3 Survey Population

(table 2)

Numbers of wells completed from September 1985 till January 1989

	DCP 1985 - 1988			SUB	RWHP 1988 - 1989			SUB	TOTAL
	deep	rep	new	TOTAL	deep	rep	new	TOTAL	
Solwezi	3	24	21	48	0	1	12	13	61
Kasempa	8	21	12	41	7	3	8	18	59
TOTAL	11	45	33	89	7	4	20	31	120

The survey covered 111 of the 120 completed wells, 54 in Solwezi District and 57 in Kasempa District.
On the average some three to four persons living at walking distance from the well (ca. 3 km.) were interviewed.

No. of individuals interviewed (table 3)

	Solwezi	Kasempa	Total
VWC-members	20	24	44
Local Leaders	28	14	42
Non VWC-members:			
- women using the well	53	55	108
- women not using the well	32	5	38
- men using the well	54	57	111
- teachers primary school	13	9	22
- pupils primary school	12	7	19
- health assistants at RHC's	0	4	4
- community health workers	0	6	6
Total	212	181	393

In Solwezi 53 (25%) of the persons interviewed shift temporarily, and in Kasempa 57 (32%).
The total periods people were shifting ranged from a few weeks up to 9 months.
If we compare the answers of the people who practise shifting

cultivation to the question on living standards (whether they have a bicycle, iron sheets or a radio) then there is a trend that people who do not practise shifting cultivation have more property than those who do.

The assumption that a protected well leads to more permanent settlement is not confirmed by the results of the survey. In Solwezi, the percentage of non-well users who go for shifting (16%) is even lower than the percentage of shifters in the well users group (25%). The selection of non-users to be interviewed (done by the local leaders) can have influenced this result. They might have selected the more well-to-do people.
And the establishment of service facilities (water, health, education, roads) will not influence individuals on the short run, but might change agricultural practises and related settlement patterns on the long run.

Conclusions:

3.3.1 The survey population that is settled permanently has more property.
3.3.2 There is no direct relation found between the existence of a protected well in a village and more permanent settlement.

3.4 Well use

On the total numbers of people using the wells for household purposes, table 4 and table 5 will provide you the information.

Numbers of households using the wells. table 4

District	No. of wells surveyed	Total no. of households using the wells	Range of households per well	average no. of households per well	average no. of people per househ.
Solwezi	54	1905	9- 97	35	5.6
Kasempa	57	2198	7- 177	38	6.4
Total	111	4103	7- 177	73	

Numbers of villages and individuals using the wells. table 5

District	Total no. of villages using wells	Range of villages per well	Average no. of villages per well	Average no. of people per village	Total no. of well users	Average no. of users per well
Solwezi	506	3-20	9.4	21	10,626	196
Kasempa	694	1-35	12.2	20	13,880	244
TOTAL	1200	1-35			24,506	221

The numbers of people using the wells for other than household purposes are given below in table 6 for schools and Rural Health Centres:

Numbers of other well-users table 6

District	No.of schools using the wells	Range of users per school	Total no. of users at schools	No. of RHC's using the wells	Range of patients per RHC	Total no. of users per well
Solwezi	13	182-549	3,685	2	?	?
Kasempa	9	?	?	9	326-8592	14,933

Although the population density in Kasempa is less than in Solwezi, the wells are used by 20% more people. The fact that there are more natural water sources in Solwezi than in Kasempa District might be the cause of this.
In Solwezi there were no officers at the RHC's at the time of the interviews, so we miss that information. These RHC's have their own wells, constructed by the councils and because they are old they make use of the project's protected wells.
In Solwezi the average walking distance to the well for well-users is 6 minutes (ranging from 1 - 20 minutes) and for the non-users 10 minutes (6 - 35 minutes). In Kasempa the average walking distance to the well for its users is 3.4 minutes ($\frac{1}{2}$ - 30 minutes). The 30 minutes walking distance are covered by an Health Assistent who has no access to clean water nearby, who understands the need for clean water because of his profession and who has a bicycle to transport the water. This is an exceptional case, the most common reason for using the well is that it is the most nearby water source.

The question as to why some nearby villagers are not using the well was answered by both users from protected as well as from natural sources. The reasons are given here-under.

Main reasons for not using the protected wells table 7

	SOLWEZI	KASEMPA
the well is too far	111	11
have own well	56	6
use stream	19	0
other reasons	15	3
TOTAL	201	20

Other reasons mentioned in Solwezi included:
lack of cooperation (6), misunderstandings (3), the own source tasts better (2), out of traditional respect for the chief (2), have other source nearby (1), people are ignorant to keep water

clean (1). In Kasempa. all use the well (1), did not assist in construction (1), do not know (1).

Since the interviewees showed some signs of modesty with this question, the few answers given that are a bit critical must be taken very seriously. For example that some people prefer the water from the shallow well for drinking water because of the taste. How many well-users practise this habit is difficult to find out as they expect the interviewer to disapprove this practise. So their answers will be according to that. Maybe this choice of drinking water is caused by their fear for pollution of the water from the protected well, (see page 14 on beliefs on cleanliness of the protected well's water).

If we try to translate the diplomatique answers, then "lack of cooperation" probably means that nearby villagers did not assist in constructing or maintaining the well and therefore are excluded from using the well.
"Misunderstandings" can mean the same, that people were excluded because of a discord on constructing or cleaning the well, or on raising funds for the well.
To find out to which extend action is taken when families did not contribute to the construction, we asked if they were allowed to draw water from the well when they had not assisted in the construction. In Solwezi most people (91%) would allow everybody to use the well, but in Kasempa nearly 40% was against it. Reason given why the exclusion of well-users is not so popular was the fear that the excluded persons could poison the well.
At some wells a way to get permission to use the wells without having assisted in the construction, was to pay a certain amount of money.
Sometimes the well was used by only one extended family because they were more active in the construction, or more influential than others and had the well allocated in their own village.

Whether a well leads to more settlement of new families around it was an assumption which was partly confirmed. In Solwezi 25% of the people answered positive on this question, with an average of 2.7 new families per well. In Kasempa 33% of the wells get new families around it, with an average of 3.6 new families per well. If we relate the number of new settling families to all the wells surveyed, then we come to an average settlement of 1.1 new family per well. Then we leave out the results of the UN Maheba refugee camp, because there people have no free choice to settle.

Conclusions:

3.4.1 - The average number of well-users for household consumption is 221 persons per well.

3.4.2 - In Kasempa the wells are used by more people then in Solwezi and the walking distance of the users to the well is also smaller.

3.4.3 - Main reason given for not using the wells is the distance.

3.4.4 - Exclusion from well-use is more common in Kasempa than in Solwezi District. Reasons are most probably organizational; that the excluded ones did not assist in construction and maintenance.

3.4.5 - Project wells have an average settlement of 1.1 new family per well.

3.5 Use of information for programme development

3.5.1 The nearness of natural water sources in Solwezi seems to reduce the number of protected well-users. We also find that the most important reason for not using the protected well is the distance, even for people who do not live so far from a well. So in general it seems that the main reason for using protected wells is the nearness of the water source and not the cleanliness. Therefore it is recommended to give preference for construction of wells to people who live far away from a water source in dry places.

3.5.2 It is found that malaria and diarrhoea are the most prevalent illnesses in the working area. Both are related to water and both are only properly reduced through health education and clean water. This stresses the importance of improving and extending the health education programme.

3.5.3 Shifting cultivation is a cultural habit executed by part of the well-users. Since the period of leaving the houses (and the wells) for cultivation sometimes lasts up to 9 months, it is recommended to give people who are settled permanently or who shift just for short periods preference in order to have the wells used more economical.

3.5.4 Some reasons for not using the wells are organizational reasons. Therefore it is recommended to make criteria for selection of new wells. Through these criteria the future well-users must be checked on:
- Number of future well-users and the names of who are going to use the well (well-users list).
  There must be a minimum number of users. This way they are forced to organize themselves and discuss who are going to use it. Maybe this prevents organizational problems and exclusion of people in a later stage.
- Their level of organization; an already formed Village Water Committee gets preference.

3.5.5 Since some wells are not used by many people because the well is sited at the place of one (influential) family it is recom-

mended to build new wells on communal ground, in the centre of all users (if technical possible).

4. Water and sanitation, knowledge and practises

4.1 Water source, water quality and quantity and water use

We interviewed a total of 356 protected well-users (Solwezi 180, Kasempa 176) and 37 persons using only unprotected water sources (Solwezi 32, Kasempa 5). Almost half of the well-users (46%) uses except of the protected water also unprotected natural water sources.
Main reasons for protected well water use are nearness to the well (42%), cleanliness of the water (32%) and protected water (26%). The answers were often combined.
Reason for using other sources is again the nearness of these water sources. The habit of shifting cultivation also makes people use temporarily other water sources. Some people prefer shallow wells for drinking water. They like the soily taste and they believe it is cleaner than the protected wells. Background idea for this belief is that a shallow well is first scoped out to remove the dirty water. Then the clean water, filtered by the soil comes in. They do not trust the cleanliness of the protected well because the water is stagnant and it can not easily be cleaned by emptying it.

Peoples opinion on the quality of the different water sources, are given in percentages in table 8.

Opinion on the quality of different water sources given by its users. Table 8

	Protected well users Solwezi 180=100% Kasempa 176=100%									Unprotected well users Solwezi 100=100% Kasempa 33=100%								
	Cleanliness			Taste			Colour			Cleanliness			Taste			Colour		
	+	±	−	+	±	−	+	±	−	+	±	−	+	±	−	+	±	−
Solwezi	85	10	5	80	8	12	80	7	13	91	6	3	91	6	3	90	6	4
Kasempa	81	7	12	72	22	6	75	20	5	36	36	20	43	24	33	47	26	47

+ = good
± = in between
− = bad

Results:
The most obvious outcome is that Solwezi people regard the unprotected wells more clean than protected wells. In Kasempa the opinion on the quality of unprotected water is more negative.

Water use.
The water use in the villages is mainly for household purposes. Only 4% of the protected wells were used for irrigation and 12% of the unprotected sources. Wells near schools are mainly used for drinking

water of the pupils and for domestic use of the teachers, the weekly-boarding students and the surrounding villagers.
Rural Health Centres use it also in the first place for domestic use of health workers and nearby villagers. Further it is used for the patients and their attendants (relatives), and for cleaning purposes of the Centre and the materials used.

Purposes of protected wells compared to the purposes of the unprotected wells Table 9

Purpose	protected wells		unprotected wells	
	Solwezi 177=100%	Kasempa 170=100%	Solwezi 89=100%	Kasempa 24=100%
drinking	96%	100%	100%	92%
cooking	98%	96%	90%	92%
bathing	100%	97%	88%	100%
laundry	97%	88%	91%	96%
irrigation	2%	6%	16%	8%
others	1%	-	2%	-

Results:
1. In Kasempa compared to Solwezi there seems to be a preference to use water from protected wells for drinking as main purpose. This is in line with on page 14 described prevailing idea in Kasempa that water from a protected well is cleaner than natural sources (table 8). And the unprotected water is mainly used for bathing and laundry.
2. In Solwezi it is the other way around, the protected water is mainly used for bathing and the unprotected water for drinking. This also correlates with the results in table 8, where people in Solwezi seem to regard unprotected water to be cleaner than protected water.

The water use at the source and water collection.

At the site of a protected well, people use the water for drinking (especially at schools) and for washing of clothes. A special washing basin is constructed nearby the well, to enable the people to wash their clothes and at the same time to prevent the well from contamination by dirty wash water.
Natural sources as streams and lakes are used for bathing and washing of clothes. Shallow wells are only used for drawing water, people will not wash their clothes in a shallow well or bath in it. The quantity of water used for these purposes is not surveyed.

Water is transported to the homes by the women. Only 2% said it can be a man's job if he has no wife or daughters to draw water for

him.
We did not survey children's role in collecting water. At schools their role is obvious. Also at home we expect them in assisting in it, especially the girls. It is only not known to what extend they are involved.
The water is collected in the same container that is used to store it. These are mostly iron buckets of 12 liters. They are carried on the head, with sometimes some branches on top to prevent the water splattering over the rim of the bucket.

The average water consumption was according to the individuals interviewed as shown in table 10. The number of the trips made is calculated roughly by dividing the average consumption by the size of the commonly used bucket.

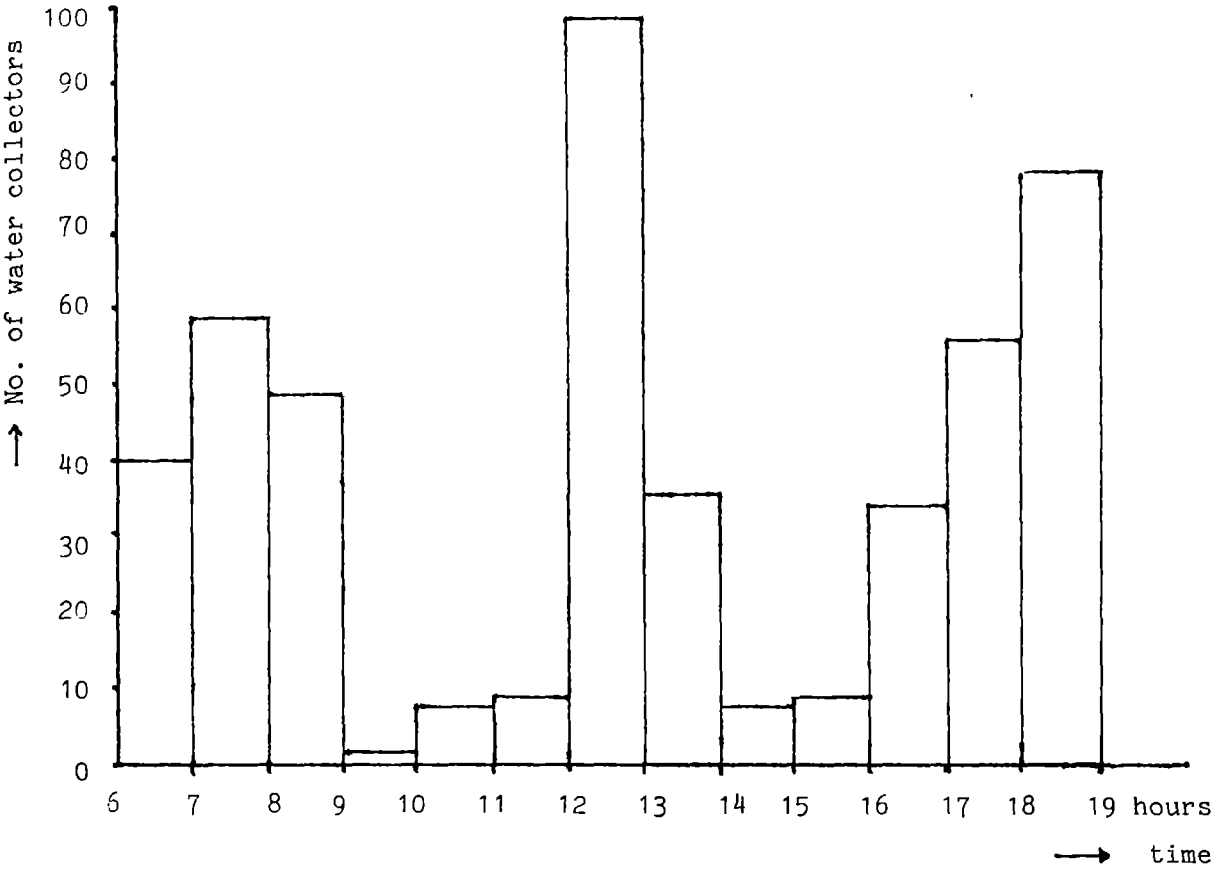
Average water consumption of protected well-users and unprotected well-users (table 10)

	Average consumption per person per day	Average no. of persons per household (see table 4)	Total liters per household	Average size of collection bucket	Average no. of trips
protected well					
Solwezi	13.2	5.6	74	12 l.	6.3
Kasempa	10.6	6.4	68	12 l.	5.6
unprotected well					
Solwezi	9.26	5.6	52	12 l.	4.3
Kasempa	6.86	6.4	43	12 l.	3.6

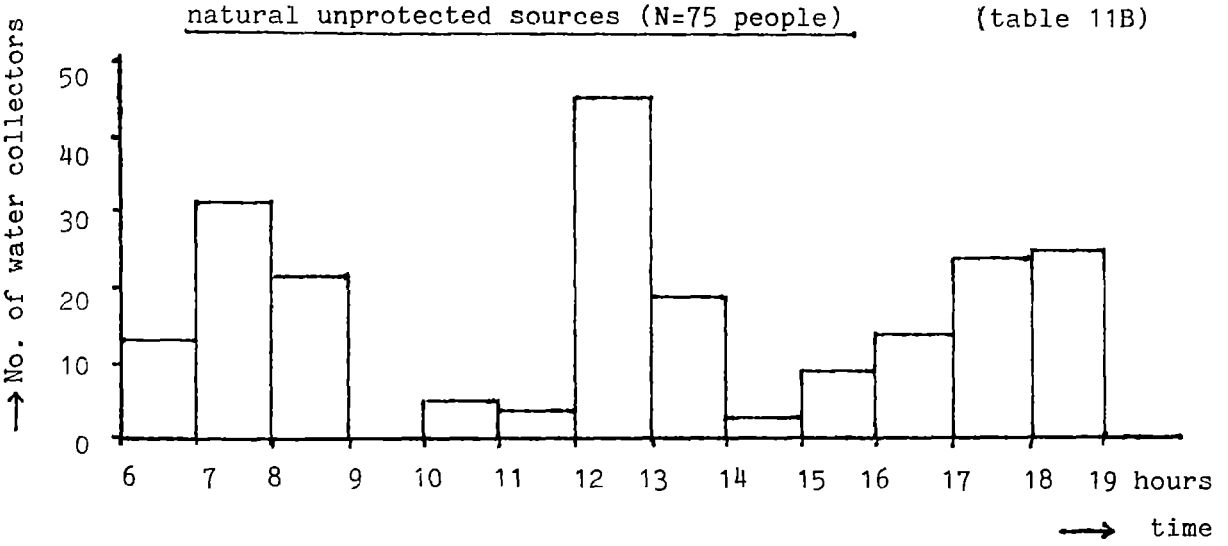
Results:
1. People who use water from protected wells use on the average more water than unprotected water-users.
2. People in Solwezi seem to use more water than people in Kasempa.
3. The average number of trips to protected wells is more (6 per day) than the number of trips to unprotected wells (about 4 per day).

The time of the day that people collect water was surveyed, in order to find out when the water is collected most frequently. This influences the water levels and sometimes leads to temporary drying up of wells and queuing of people. In tables 11A, 11B and 11C the results are given. Keep in mind that the tables give an average overview of the time of water collection in many wells. The collection times for unprotected water sources were not gathered for Kasempa.

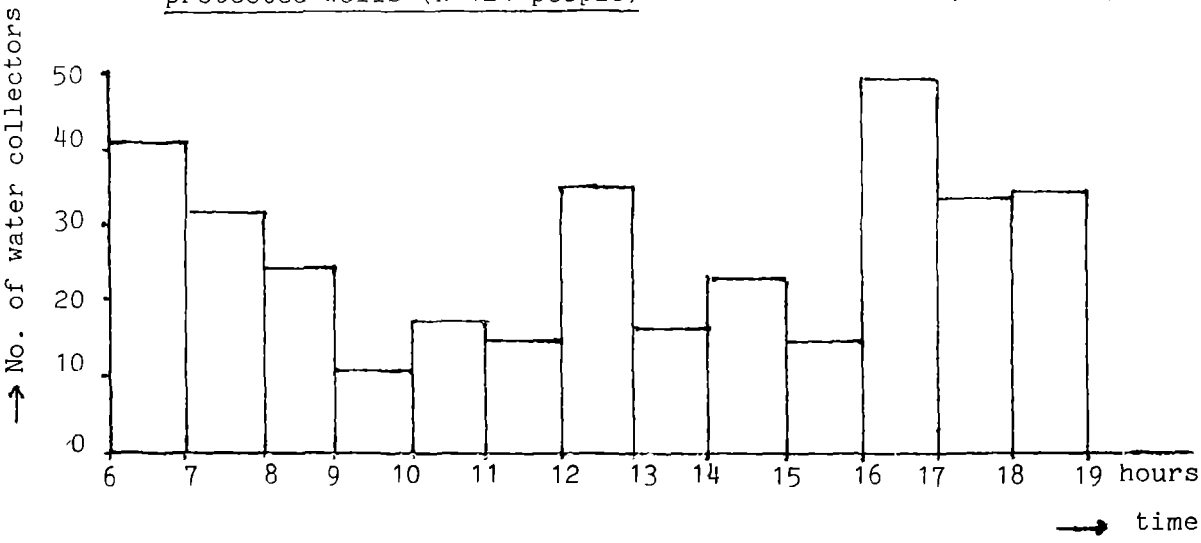
Times of water collection in Solwezi District from protected wells (N=140 people) (table 11A)



Times of water collection in Solwezi District from natural unprotected sources (N=75 people) (table 11B)



Times of water collection in Kasempa District from protected wells (N=124 people) (table 11C)



Results:

1. In Solwezi we see the same pattern in water collection for protected- as well as for unprotected water sources. So the times of water collection seem not to be influenced by the use of a protected well. Most protected wells are locked in the night between 19 and 6 hours, but we see that natural sources which cannot be locked are also not used during these hours.
2. The collection times in Kasempa have less peaks and downs, it is more regularly spread over the whole day, with a small peak between 16 and 17 hours. This might be influenced by the vague answers given on the question when water is collected. (like "the whole day").
3. In Solwezi we see clear peaks between 7 and 8 hours, between 12 and 13 hours and between 18 and 19 hours. This might influence the watertables, that after these hours the watertable is lower then before.
4. For both Solwezi and Kasempa the lowest collection time is between 9 and 10 hours, so maybe the best times to measure water-levels for the project are in the morning before 6 hours, between 11 and 12 and between 15 and 16 hours.

Conclusions:

4.1.1 Reasons for using water sources are mainly the nearness of a source. Cleanliness or safeness of the water are found less important.

4.1.2 The peoples opinion on the quality of protected water, related to unprotected water shows in Solwezi a more positive opinion on the quality of unprotected water.

4.1.3 The water quantity of protected well-users is higher than the natural water-users.

4.1.4 Times of water collection seem not to be influenced by the sort of water source.

4.2 Water use practices and health knowledge

Water collection.

We surveyed the knowledge on how to collect water from the protected wells in two ways: Through the questionnaire we asked them how one should collect water, and we observed people's behaviour at the well-sites (these were not the same as the ones interviewed).

The results are shown in table 12. The numbers of people giving a certain answer, or showing a certain behaviour are given as a percentage of the total number of people answering or being observed. Note that people's handling might be influenced by the observer's presence.

Knowledge and observations on collection of water from protected wells.

(table 12)

	questionnaire (knowledge)		observations (practical handling)	
	Solwezi 181 = 100%	Kasempa 160 = 100%	Solwezi 146 = 100%	Kasempa 31 = 100%
washing of hands before drawing water	12%	67.5%	0%	0%
washing of water container	100%	67.5%	82%	77%
lowering the bucket with care	64%	100 %	74%	79%
closure of lid after use	54%	78 %	66%	81%

Results:

1. Washing of hands was not observed at the well-site. It is not known whether people do it at home before they collect water. The knowledge on the need to wash hands is little in Solwezi and in Kasempa people are more aware of it, but this does not influence their practical handling.
2. Washing of the water container: In Solwezi people know this is important and handle according to it. And in Kasempa the knowledge on this seems to be relatively lower than the practical handling.
3. Lowering the bucket with care seems to be more known in Kasempa than in Solwezi, but we see that the practical handling is almost the same (about 75%)
4. Closure of lid after drawing water is not known by many people in Solwezi, but a higher percentage does it practically. In Kasempa there are relatively more people who know that closure of lid is important, and an almost similar percentage handles according to this.

In general we see that there is not always a direct relation between knowledge and practical handling.

Water storage and handling.

Most important observations on storing the water were:
- most of the containers had a lid to cover the water
- not all but a good percentage was stored in a clean container
- in Solwezi it was observed that water in the house was scooped out with a special cup for this purpose more often than in Kasempa.

Whether or not the water was touched with the hands while drawing, was difficult to observe. The interviewers felt it embarassing to check this. The few observations showed that most of the times the water was touched with the hands.
Drinking water is not separated from water for other purposes, it is all stored in the same container. Most are placed in a corner of the house, more well-to-do people have it standing on a cupboard or a high stool.

The knowledge on how to prevent the stored water to become dirty, is mainly concentrated on covering the water jar, as we see in table 12.

Measures to prevent water becoming dirty as mentioned by the respondents (table 13)

	Solwezi 168=100%	Kasempa 167=100%
clean container is important	73%	27%
use a special cup for drawing water	68%	25%
collection container must be clean	52%	15%
water storage must be in a cool place	48%	28%
not touching the water with hands	10%	12%

Results:
1. In Kasempa most people give only one measure to be taken to keep the stored water clean.
2. In Solwezi most people know that a clean container is important, and also the usage of a special cup gets relatively a high score.
3. The storage of water in a cool place is in itself not protecting water from dirt. A warm place in the sun gives it even more opportunities to get rid of bacteriological contamination. The reason why people have given this answer might be that a cool place is in the house and protects it from dust (and leaves) outside.

Personal hygiene

The knowledge on why personal hygiene is important we found the following results given in table 13.

Respondents opinion on the reasons for applying personal hygiene

(table 14)

	Solwezi 173=100%	Kasempa 183=100%
to prevent diseases	95%	86%
to prevent things getting dirty	2%	7%
to make a good impression	2%	7%
it makes you feel happy	1%	0.5%

Results:
Most people know that a good personal hygiene can prevent diseases.

Personal hygiene practises.

What is regarded important on how to wash the body was not answered often. Some people answered that they start with the head and end with the feet. They answered which parts of the body are important to clean: face is regarded to be more important than hands and feet. This opinion also counted to children. Some also mention the importance of soap and clean water. Washing feet is mentioned more in regard to adults than for children.
On how often they should clean the body per day, they answered one or two times in Solwezi, and in Kasempa mostly one time a day. This correlates with the higher consumption of water in Solwezi (table 9) and with the availability of more natural water sources in which people bath, in Solwezi.
And the opinion on when to wash the hands, people answered hardly "before preparing food" or "after toilet". Handwashing, although not mentioned often, is a habit when people wake up to wash their face and it is done before eating. The way it is normally done is that the whole group washes their hands in the same basin of water. This way dirt or communal diseases can be spread through this handwashing habit.

Knowledge on importance of clean water.

We wanted to find out whether people know the dangers of dirty water to their health. Therefore we asked them if they know why water should be clean (see questionnaire III, Annex 1, q.6b). The answers were to be summarized in 3 categories:
1. "I don't like dirty water",
2. "dirty water causes diseases" and
3. "others".
Most answers fit in the first 2 categories. Only 6 people gave other answers. The second answer shows that people know the relation between dirty water and diseases. We have categorised the answers in different well-users-groups in order to see if the level of knowledge in the

users-groups shows any difference. See therefore table 15

Reasons why water should be clean by different well-users groups (table 15)

	I don't like dirty water		dirty water causes diseases	
	Solwezi	Kasempa	Solwezi	Kasempa
VWC/ local lead	90%	56%	69%	85%
women using the well	87%	36%	72%	75%
women not using the well	88%	-	70%	-
men using the well	89%	69%	69%	88%
teacher	92%	11%	92%	100%
pupil	85%	63%	85%	75%
health assistant	-	66%	-	100%
community health worker	-	43%	-	86%
total no of people answering	189 = 100%	91 = 100%	152 =100%	141 = 100%

Results:

1. The interviewed people in Kasempa are more aware of the relation between dirty water and diseases.
2. The Health Assistants and teachers have relatively more knowledge than other users groups.
3. Village Water Committee members/local leaders have no significant difference in knowledge than the men using the well.
4. Community Health Workers have no more knowledge on this subject than the average.
5. The women using the well in Kasempa and the pupils in Kasempa have less knowledge on the dangers of dirty water than the average.
6. In Solwezi there is except for the teachers and pupils not so much knowledge on the health dangers of dirty water.
7. Women not using the well have the same level of knowledge as women using the well.

The quantity of water collected according to the various users group can be found in table 15. The quantity is not measured, but the interviewees were asked the size of their bucket and the number of trips they make per day to collect water. (See Annex III q 3c). Since most people find it difficult to estimate the size of their bucket, the data might not be absolutely correct. But since this problem with estimating occurs in all users-groups, the data still

can serve the purpose to relate different users-groups to each other.

Average quantity of water collected in litres per day per person for the various users-groups (table 16)

	Solwezi	Kasempa
VWC/Local leaders	13	9
women using the well	15	12
women not using the well	9	7
men using the well	13	11
teachers	9	8
pupils	7	5
health assistants	-	26
community health workers	-	28

Results:
1. Health assistants and community health workers use much more water than other groups.
2. In Solwezi District people seem to use more water than in Kasempa District.
3. The quantity of water used by teachers and pupils is relative small.
4. The non well users group uses less water than the average of the users groups.
5. Apart from the health assistant and the community health workers the women using the well give the highest quantity of water used per person per day.
6. Schoolchildren, teachers and people not using the well seem to use less water than other groups.

If we compare the results of table 15 and table 16, than we see that more knowledge on the importance of clean water does not correlate with a higher quantity of water collection, except for the health assistants.

4.3 Sanitation practices and health knowledge

A rural house usually is made out of a framework of wood, covered with mud. Some houses are made out of self baked stones. Mostly there are 2 compartments in the house, a bedroom and a livingroom which also serves as a store for water and cooked food. The roof is made out of grass, tied on a wooden framework. More rich families have stone houses, have more compartments in the houses and have iron sheets as a roofing. The floor is mostly made out of leveled mud. Both, the mud floor and walls need plastering quite often. The house is built on an elevated place to prevent the rainwater coming in.

A rural kitchen is at the same time the eating place for mother and children. It is an open building near the house with a grass roof, called kinzanza. The people cook on wood. Kitchen utensils (pots, plates, knives, spoons) are kept in the house and/or in the kitchen, on a shelve under the roof. Food like maize and sorghum is stored in special stores, on high poles to protect it from animals and water.

Most important cleaning activities in and around house and kitchen, noted down in order of mentioned importance are:"sweeping", "smearing of walls and floors" and "dusting". Sweeping is done at least once a day, but most of the people interviewed say they do it 2 or 3 times a day. The immediate surroundings of the house and kitchen are also swept. The main reason given why they clean the house and the kitchen is (90%) "to prevent diseases". Other reasons given are: "to prevent things to be dirty" " to make a good impression", "to keep the insects away". So most of the people interviewed know there is a relation between dirt and diseases.

The kitchen utensils are washed with water and sand, soap, ashes or mealy meal. Many people answered they use soap (about 33%) but this is questionable. They might give this answer to make a good impression since soap is expensive and scarce. The same applies for the questions on how often they clean something. Cleaning the kitchen utensils is not always done after eating. Especially after the evening meal most women do not clean the dishes. They put the utensils and the left overs in a big basket or a bowl and put them uncovered inside the house.

Latrines and rubbish pits

In Solwezi 92% of the interviewed people have a latrine and and in Kasempa 89%. The average number of latrines in villages with toilets, is per village 2.7 in Solwezi and 3.8 in Kasempa. The number of latrines at schools and health centres are not given, because employees at those places answered according to their home situation. In Solwezi 98% of the latrines were in use and in Kasempa 87%. Some families have constructed a latrine only because they were told to do it by local authorities but they do not use it. Others have constructed one only for the use of visitors. Those not in use are cleaner than toilets in use. Most latrines have a pit with on top a floor made of logs and mud. The structure around it is the same as normal houses, made out of pole-and-dagga-structures or bricks. The roof is made out of grass or iron plates. Some people cover the pit, but this is not quite common. The latrines are not provided with ventilation systems.

On the cleanliness of all the latrines we see that almost half of the people have dirty toilets, and that public toilets are generally more dirty than private ones.
The toilets are being cleaned through sweeping it and throwing ashes into the pit.

The reasons people give for using a latrine are in order of importance: "to prevent diseases", "for a clean surrounding", "for privacy", "to prevent animals and children eating shit", "for shelter when raining", "to show others they know about cleanliness", "to stop flies", "to prevent pollution", "because they were told to use it".

No relation was found between level of knowledge on why toilets should be used and cleanliness of the toilets. There was also not very much difference in the answers of the various users groups. The only group that clearly has more knowledge are the health assistants, and their private toilets are clean and in use.
There is a tendency that in Kasempa women give less extensive answers on why a latrine is used that men. Further the non well users group has the same level of knowledge as other groups and practise the same hygiene habits. And the Village Water Committee members also do not have a difference in knowledge or hygiene practises.

Of the people interviewed 70% in Solwezi have a rubbish pit and 80% in Kasempa. The average number of rubbish pits per interviewed village is in Solwezi 1.1 and in Kasempa 2.5. The rubbish exists out of cutted grass, droppings of animals and children, dirty water, ashes, food left overs, dust from the houses, etc.
If no pits are used, then the rubbish is thrown everywhere. Especially the droppings and rotting items can cause a spread of diseases. In the rainy season this danger is being strengthened.
Most of the rubbish pits are in use (in Solwezi 2% are not used and in Kasempa 20%). More than half of the rubbish pits were regarded to be unclean by the interviewers. This meant the pits were covered with tall grass and the rubbish was thrown also next to the pit.
Reasons for using rubbish pits is less related to prevention of diseases than for using latrines. Most important reasons why rubbish pits are used are "for a clean compound", "to prevent disease", "to keep insects away", "to prevent children and animals eating rubbish", "to show others you know about cleanliness" and "to serve as manure".

Results:
1. There seems to be a latrine in almost every village interviewed. And half of them were regarded to be dirty by the interviewers, especially the ones at schools.
2. In general we can conclude that rubbish pits are used by less people than pit latrines, that they are less clean and that the knowledge on their importance is also less, compared to the pit latrines.
3. Another outcome is, that women in Kasempa seem to know less reasons why to use latrines and rubbish pits than men. This may be influenced by the interviewers or by stronger cultural habits.
4. We see no difference in knowledge concerning sanitation of people not using the well and the other groups.

Environmental Cleanliness

Slashing of grass, weeding and sweeping are cleaning activities for the whole compound around house, school or health centre. More than half of the places visited during the survey were according to the observations of the interviewers not clean, meaning generally that the grass was very high. Since the survey was executed during the rainy season for those villages deserted by its inhabitants the shifting cultivation is probably the main reason for this. But also for those who do not shift the pressure of cultivation time causes a certain neglectance in cleaning the compound. The most important reason given why the compound should be clean is "to keep the snakes away". Following reasons given are "to prevent diseases", "it looks nice" and "to keep flies away". Here the relation between dirt and diseases is mentioned only in 30% of the answers. So it seems that the relation between the dangers of tall grass and malaria is not so much known.

4.4 Health and health knowledge

Since diarrhoea is mostly caused by unhygienical practises, we wanted to find out whether the general data on diarrhoea of the Ministry of Health (table 1) are confirmed by the target group.
We found that almost 60% of the people interviewed answered that one or more persons in their family has suffered from diarrhoea during the last month. In table 17 below we show the occurrence in different age groups.

Occurrence of diarrhoea in different age groups (table 17)

	0-2 years	3-6 years	7-14 years	14 years and older
Solwezi	(51) 37%	(21) 16%	(9) 7%	(54) 40%
Kasempa	(28) 16%	(48) 27%	(36) 20%	(66) 37%

Results:
1. More than 60% of the cases of diarrhoea occur at the age below 14 years.
2. The highest occurrence is in the Solwezi age group between 0 and 2 years. This is according to our expectations. When children change from breast feeding to other food or when a new baby is born when the other one is still below 3 years, then the risks for diarrhoea are bigger.
   In Kasempa we see that the highest occurrence of diarrhoea is between 3 and 6 years. This is not according to normal statistics and we have no good clarification for this.
3. The occurrence of diarrhoea reduces fast when children grow older, especially if we look at the age years which get more number of years per group, compared to the percentage given.

Reasons given why people get diarrhoea:
In the first place "dirty food". Especially when many persons in one family suffer from diarrhoea they think this is the main reason. Second reason given was "dirty water", followed by "poorly cleaned hands, plates and kitchen utensils", "eating un- or half cooked food", "over eating", "sickness of a person", "eating no varied meals", "poor sanitation", "beer drinking", "eating cooked food that stayed too long", "flies on the food" and drinking "hot water in hot season". One time is answered "eating relish and vegetables" and "because of bad spirits".
We see that diarrhoea is being more related to food than to drinking water. We see also that many people relate it to eating too much or to spoiled food or to unhygienic circumstances. It is obvious that the interviewed people see a clear relation between diarrhoea and its causes.

4.5 Use of information for programme development

4.5.1 The relation between dirty water and diseases needs to get extra attention in Solwezi District for all users groups. In Kasempa we need to give extra attention with this subject to women and school-children.

4.5.2 If we want to involve the Community Health Workers in the PEP then they need a lot of training for they have the same level of knowledge as other villagers. The same counts for Village Water Committee members. School teachers and Health Assistants can be involved in our PEP without much extra training. Their knowledge on the subject is obvious.

4.5.3 School children, teachers and people not using the well use less water than the other groups . Through a School Hygiene Education Programme we can strenghten the importance of using more water to improve the hygienical circumstances in the school and in the homes.

4.5.4 Sanitation at public places like schools and health centres is generally poor. This can be a good subject for the School Hygiene Programme and a point of interest in the future cooperation with Health Assistants. Since thereis no relation found between knowledge on this subject and practical handling, maybe we should concentrate on changing hygienical habits and on organization of cleaing public toilets.

4.5.5 The promotion of rubbish pitscan be intensified in both districts. Here we see that little knowledge on rubbish pits leads to a limited use of them and to an unhygienical use. In this case we can concentrate the PEP on transfer of knowledge, together with practical digging of pits and inspection on their cleanliness.

4.5.6 Women in Kasempa District who are using the well seem to have arrears in knowledge on water and sanitation compared to the men,

(table 14). So it is recommended to Kasempa-PEP to concentrate more on how to reach women. The involvement of the Department of Social Development with its special women's clubs can be a way. It must also be a point of concern to the Community and Health Advisers in Kasempa.

4.5.7 Cultivation time is limiting the people in cleaning their environment. So we must concentrate on some basic hygiene practises which take not much extra time. This counts as well for the people who are shifting; also in the semi-permanent villages those basic hygiene practises should be executed. We must develop a hygiene programme adapted to this situation.

4.5.8 Diarrhoea occurrence is very high, according to our results and the statistics of the Ministry of Health. The knowledge on it's causes is concentrated on food more than on water. And as food-cause, the most dangerous cause, the period when babies change from breast-feeding to other food is not mentioned.
It is recommended to concentrate the PEP on:
1. dangers of dirty water, related to diarrhoea and other diseases.
2. involvement of MoH in discussing the dangers of changing babies from breast-feeding to other food.

5. Well construction, care and maintenance

5.1 Organization of well construction

In Chapter 3.1 it is described that the history of self-help projects in Zambia is still young. To organize themselves is something new. We wanted to find out how people organize themselves.
On the question who had organized the people in construction, it was mentioned in the first place that the villagers were organized by the Ward Chairmen, followed by the Village Headmen. A ward Chairman is a person employed by the Zambian Government to coordinate development activities in a ward. Every district exists out of 10 to 20 wards.
A Village Headman is the eldest man in a village, the head of the whole family. Because a village is inhabited by one extended family Village Water Committees were hardly mentioned. They are not yet active in the constructing phase. Other important people mentioned were chiefs and teachers. Those local leaders organized meetings in which the villagers were motivated to assist in the construction. Some local leaders also hampered development activities.

The people who were supposed to assist in the work were the future users, sometimes every family had to assist, in other cases anybody who was available had to assist. In practise we see that 50% of the interviewed people say that not all the well users helped in the construction. Only a few answered positive on the question if this created problems. Problems mentioned were: "They refused to assist in construction but also to pay money". "The ones who helped in construction are not happy with the well-users who didn't help".

The contribution of men was digging the pit and construction of the well. A few answered that men had to contribute in carrying sand and making a fence. women's contribution was making food and beer for the constructors and clearing the place before they could start working. A few answered that they helped in removing the soil from the well and in bringing stones and sand for construction.
In Solwezi District, the people of the Maheba Settlement Scheme for refugees did not help in construction. And in Solwezi it is answered 1/3 of the times that women did nothing during construction. Everybody thinks that the contribution of men and women was sufficient "because the well is constructed"; they reached their goal.

The interviewed VWC-members and local leaders in Solwezi think that both Ward Chairmen and chiefs are very cooperative in water developments. In Kasempa they are a bit more critical, and it is answered a few times that they are not interested or that they do not understand the importance of clean water for a community.

On the ownership of the well, interviewees in Kasempa say in most of the cases that "all the villagers" or "everybody" owns the well. In Solwezi "the well-users " are generally regarded as owners by most of the interviewed people. Other owners mentioned are "the school",

find maintenance should be done by men and cleaning by women, but the majority answered that these tasks must be executed by both sexes.
Cleaning the well means sweeping it, weeding and slashing. Maintenance means repairing breakages, apply lubricant, make a drainage. Other duties mentioned are opening and closure of the well for the night and chasing away the children who are misusing the well.
On the question if people know how to repair cracks and loose standpoles 57% answer straight with "no" in both districts. The 43% that answer with "yes" know that cement should be mixed with sand and water. To check if they really know a bit about concrete work we asked if they know the price of one bag of cement. That was known only by 17% of the people interviewed in Solwezi and by 5% in Kasempa. So the knowledge of repairing the concrete work of a well is with a small number of people.

Major problems mentioned in using the well are the weakness of the bucket, drying up of the well during the dry season and lacking of items (bucket, lock, lubricant, windlass) because they are worn out or stolen.
On the question if they know how to handle these problems, most people in Solwezi District answer just "no" or say that they need the Department of Water Affairs for repairs. They still feel not responsible for the well themselves. In Kasempa people give more possibilities how to overcome the problems. Main suggestions are concerning the bucket, to reinforce it with wire, to buy a new one, or to have a spare bucket in stock. Education and meetings are also regarded as important to solve the problems. Most of the people answered they are satisfied with the way the well is functioning, maintained and repaired (90%). Complaints are concentrated on too little water, no cleaning of the well inside after construction through the dewatering pump and wrongly constructed aprons which cause standing water.

5.3 Assistance of the project

The project's assistance, technical as well as educational, was surveyed through questions to VWV-members/local leaders. The answers generally were very positive, maybe also because it is culturally not common to bring critical ideas forward. So if people were critical, we think we should take this very seriously and see if we can use that in our programme development.

The "self-help" working method was explained at most wells by the Project Staff. According to the respondents the exceptions were:
6 Maheba wells at UN refugee camp in Solwezi and 2 wells in Kasempa. Those wells are now in a poor condition. The construction team worked mostly "properly and in time". Complaints were: the materials came late what delayed the work and one time that the normally constructed washing basin was not made. Especially delay of work might influence the motivation for the self-help negatively.
On the quality of the well construction are the main complaints that

the well is not deep enough so that it dries up in dry season, and that the windlass is too high so that some people can not handle it. Further the poles became shaky sometimes. The project works on these problems already through redeepening of wells and making stands under the windlass to enable short people to handle it. On the shaky poles there is the policy that when it is due to poor construction it is the project who repairs it. Other cases, mainly caused by careless handling are to be repaired by the users. So it depends on the judgement of the project supervisor whether the project pays and executes these repairs or the village. If the village has to do it, they might need some organizational, stimulating assistance from the education team.

The siting of a well, mostly done by Village Headmen (but also by the Ward Chairmen, the project or the villagers) is according to most of the interviewees done correctly. Problems mentioned on wrongly sited wells were: siting too close to a school so that the villagers had to walk a large distance. Drying up of a well is also related to the siting. Further complaints were that in rainy season the well got a lot of dirt in it and that the wells are constructed too close to the road. This causes theft and usage of the well by strangers with chance of pollution. Last complaint was that the well was constructed too far from the interviewed people.

Education on how to handle and maintain the well was in general judged good. In 8 cases it was not given. Education on why to use a protected well had also in general been done good. But again the same 8 cases got no education on this, plus 4 other ones. So some wells got no education, the reason for this was one time because the villagers themselves did not show up. In other cases the project did not come.

Since the extension workers found it difficult to reach the villages, we surveyed if the Appointment-making-system worked. The complaints here were that they sometimes did not stick to their appointment, what meant they came much later than promised or did not come at all. Another complaint of the interviewees was that the extension workers sometimes promised to bring items for the well, what was not followed-up (buckets, chains, locks).

On the educational methods were no complaints. If pictures were used, then the interviewees said they made the subject clear and the same was said for the theatre group. The only complaint was that the pictures were too small. These are pictures on A4 size of the series of Western Province's WASHE project. They should be given to the people to stimulate discussions. Maybe in some cases they have been used as posters, for which they are not made.
Pictures were used at 37 places in Solwezi and 30 in Kasempa. The theatre group performed only in those places where also pictures were used.
So about 50% of the wells got education through both using pictures and theatre group and the rest did not get it.
On the summarizing question whether the project had assisted them

right, the comments concentrate on wells not being dewatered after construction, and on having had no education. The questions on the project's assistance seemed to have made the interviewees more critical. In the beginning they answer positively or that they do not know. But in the end they are less positive in their opinion on the project's assistance.

5.4 Fund raising

For the maintenance of a well some funds are needed. A worn bucket must be replaced, some cracks need repairs, some friction parts need lubricant. These funds have to be raised by the users, although many people think that the project should provide those items free.

In Solwezi 20 interviewed VWC-members and 11 local leaders answer that they have collected money for the well. The average amount collected is K 53 ranging from K 7.00 to K 450.00. Most of them answered K 7.50. The money is used for buying a bucket (3), a lock for K 7.50 (25), digging the well for K 120 - K 450 (3) or to have the windlass welded for K 52 (1).(K= Kwacha).
In Kasempa 34 VWC-members and 2 local leaders answered that money has been collected. The average amount is K 44.60, ranging from K 1 to K 120. Purpose of the collection was: to buy a bucket (22), to buy a lock (11) and 8 times it is not specified. The money paid in Solwezi on labour of diggers gives it a high average, but at most of the wells in Kasempa there is collected more money than in Solwezi, in order to buy a bucket. Nobody mentioned lubricant and cement as items to be bought for maintenance.
On how to raise funds, most of the people suggested to donate money. Only a few suggest income generating activities like sale of beer or charcoal.
The Village Water Committee is by half of the people mentioned as the most appropriate body to raise funds. The others find it the responsibility of the Village Headmen or the chief. This correlates with the actual situation that about half of the wells are having a Village Water Committee.
The best time to raise money is March, April, after people have harvested. And most people think it is better to raise funds 2 or 3 times a year instead of once a year. But at the same time, contrary to this regular proposed fund-raising many people suggest also to raise funds when problems arise.
This dualistic answering on when to raise funds makes it clear that usually the people do not plan any fund-raising. Only when they were asked specifically how many times a year funds should be raised, they gave the specific answer.
On the amount of money to be donated both Kasempa and Solwezi people think on the average that about 5 Kwacha could be paid per household. The answers range from K 0,20 to K 20.

5.5 Status of the well

5.5.1 Condition of the well

Condition of the wells (table 18)

	Solwezi		Kasempa	
No. of wells surveyed	53 = 100%		55 = 100%	
buckets in a good condition:	18	34%	24	44%
chains "	46	87%	55	100%
windlasses "	47	89%	49	89%
liners "	52	98%	51	94%
lids "	51	96%	53	96%
cover plates "	44	83%	53	96%
poles "	50	94%	51	94%
apron "	52	98%	50	91%
drainage "	40	76%	54	98%
soak away "	33	62%	43	78%
wash basin "	40	76%	51	93%
fence "	26	49%	3	5%

If the condition was poor or bad, the following remarks were made:

Buckets: Are leaking, missing (some stolen) or local buckets are used. In the cases they are missing the users brought their own buckets. The condition of the bucket is relatively very poor. It is the weakest point of a well.

Chains: Problems found with chains were: breakages and therefore they become too short. Another increasing problem is that chains are stolen especially those ones from wells close to main roads. Although some breakages were noticed, this seems to be the result of misuse. Most of the chains were in correct condition and the quality is very good. They are bought in Botswana by the project.

Windlasses: Some windlasses were broken and some were missing (stolen). The latter only at 2 Maheba wells, where the general condition of the wells is very poor.

Liners: Problems noticed with the liners are that they sometimes were broken or not in line (subsidences of ground layers can cause this problem).

Lids: Some were broken or the cement around it comes off. But in general their condition is good.

Coverplates: As said above, sometimes the cement around the lid brakes off which causes holes that hold water. Or the plate has a crack.

Poles: Most common problem found concerning the poles is that they are shaky. This results in other problems, i.e. the windlass gets damaged or comes down, so that the lid cannot be opened. Or that the poles break off.

Aprons: Problems are that they have cracks or holes which cause stagnant water. Some have been constructed in such a way that not all the spilled water floads away through the drainage.

Drainage: Some had cracks which cause dirt staying in the drainage.

Soakaway: Many soakaway pits are "full". They do not absorb any more water. So the place becomes swampy, attracting insects and animals.

Wash basin: At Maheba there were no wash basins constructed. The problems mentioned on the washing basins were mainly that the outlets of water were constructed too high, so that sand and washing water stay in the basin and make it dirty. Some of them have cracks, which cause leakings or stagnant water.

Fence: In Kasempa most of the wells have no fence at all, for there is no cattle in that area. In Solwezi there are more wells with a fence around it, but in general in both districts their condition is quite poor. The fences which are usually made of bamboo need repairs every now and then what is mostly not executed. They are constructed by the villagers.

5.5.2 Maintenance of the well

Lubricant on poles is applied at only 5 wells (9%) in Solwezi and at 16 wells (28%) in Kasempa. On the hinges it is applied both in Solwezi and in Kasempa at only 4 wells. These are the same wells as where lubricant was put on the poles.
So in general most of the wells are not maintained concerning the application of lubricant. When it is not put on the poles, this causes wear at the windlass and at the poles. With the hinges the same problem occurs when no lubricant is applied: quick wearing out of the twisting points.
Reason for not applying lubricant some people gave is the non-availibility of greese and they expect the project to bring this.

The slab is generally clean, if not cracks or wrong leveling of the slabs are the causes of stagnant water and dirt. This also counts for the drainages.

The soakaway pits that are not maintained are the same ones being marked by the interviewers as being in a bad condition (ch.5.5.1). They should be emptied and filled with new stones that can absorb water again. This is not done, so especially during rainy season the soakaway pits become muddy places.

A wash basin in a good condition is also clean for the dirt will go

with the water through the outlets. The only maintenance they need is repair of cracks and holes.

The surroundings of the wells were in 75% of the cases quite clean. Not clean meant that long grass grew around the well. These are places where insects (mosquitoes) like to breed.

On cleanliness of the bucket we got no right information, for the condition of the bucket was mixed up with cleanliness. Only at 5 wells in Solwezi and 3 in Kasempa they had a spare bucket available. This is only in 7% of all the wells and in relation to the general condition of the buckets a point of concern.

Big breakdowns that cannot be repaired by the well users themselves should be reported to the Department of Water Affairs. To get an idea if this reporting is done within a reasonable time we asked if big breakdowns were reported within 2 weeks. Only at 1 well this question was answered positive. Of course at many wells there were no big breakdowns so the question was not applicable to their situation. But even at the wells with major breakdowns, these seemed not to be reported quickly.

There is no relation between the age of a well and it's wear, some old wells, constructed in '85 or '86 are still in a good condition and new ones are in a bad condition. This also counts for the weak parts of the wells, the bucket and the soakaway pits. There is no clear relation between the number of users and the condition of the well, except for schools. We see in general a worse condition of wells used by schools than the average. And the expectation that wells near Rural Health Centres are better maintained did also not come out. Their condition is, like wells near schools, average or worse that that.

There is a relation between education given and the condition of a well. We see that in general those places that got no (health) education have a well in a poor condition. The Maheba Refugee Settlement Scheme is an extreme example of this. All the wells there are in a very bad condition; no buckets, windlasses, stolen chains etc. And at none of these wells the community was involved in the construction. They also got no health education, they were not involved at all.

The condition of a well is also influenced by the way the users maintain it. At those wells where lubricant is applied even at the hinges or where they have a spare bucket available, the general condition of the well is good.
There was no clear relation found between wells with a VWC and its condition. It was generally not in a better condition than the average.

5.6 Use of information for programme development

5.6.1 The organization of well construction can be improved on the following points:

- Before digging is started, it must be clear who are in future going to make use of a well. (See recommendation 3.4.4)
- It must be clear what are the conditions for being a well user (contribution during and after construction through labour/or donations).
- The duties of women and men during well construction must be clearly defined and devided.
- The role of Ward Chairmen and chiefs in water developments must be defined so that they cannot hamper activities.
- Selection of well site must be done by all future users, represented in an equal way. In case of governmental bodies using the well, their influence in the selection of the site must be reduced. This is in order to increase the sense of ownership of the villagers who are sharing a well with a school, a health centre or a wild life camp.
- Siting of wells should be near to some houses to prevent theft of parts of the well.

5.6.2 Good care and maintenance of the well can be achieved through:

- Including in the Participation & Education Programme a part on handling of wells: why to handle it with care and how. With regard to "how",hand washing before drawing water must get attention.
- The responsibility for good care and maintenance is for the VWC and especially the caretaker. In case they are not formed there is nobody special assigned for this job. The cleaning of the well is mainly regarded as a women's job and maintenance as a men's job. Both care of the well and maintenance must be defined more precisely. Then these jobs can be devided, so that both executors and organisors know who is responsible for what. The role of the sexes in these tasks must become more clear, with focus on the question if women should be more involved in maintenance and men in cleaning, or not.
- Practical skills of applying cement and lubricant and if possible skills on repairing the bucket must be taught to 1 or 2 persons per well in order to enable them to execute these jobs. These persons should preferably be people who are most of the time at home (near the well).
- The PEP should stress the responsibility of the well users on maintenance of the wells, so that they try themselves to solve problems that arise.
- To better know the required well depth, to prevent wells falling dry in the dry season, water level monitoring should be taken up from already constructed wells.

5.6.3 Project's Assistance

- Tuning of educational and construction-activities more into each other for wells under construction as well for finished wells, might encourage people's motivation to construct, maintain and use their wells.

- There was a difference in the education programme offered to different places. Therefore it is recommended to develop a basic programme for motivation and education before, during and after construction of the well, for each well.

5.6.4 Fund raising

It is recommended to introduce a regular fund raising system or a contribution the well users have to pay. It must be found out which unity is most appropriate for paying: a household or a village. Schools, Rural Health Centres and Wild life camps must have special charges.
About K 50.00 is currently paid on the average per well per year. For good maintenance this amount maybe should be increased, so that a spare bucket can be bought and some cement is kept in stock.
The average number of households per well is 37 and the average number of villages per well is 10. If every household pays K 5.00 per year (what was said to be reasonable), there can be collected K 185.00 per year per well, as an average.
It is recommended to have a survey carried out into the average costs per well per year and in the best way to raise and collect funds.

5.6.5 Condition of the wells

we are recommending some special attention for the following well-parts:

Buckets: Since the bucket is the most sensitive part of the well, in terms of contamination of the water, and since it is at the same time found to be in the worst condition of all well-parts, it is recommended to assure, as soon as possible the availability of buckets on District level, which preferably are strong and locally repairable.

Chains: Since the chains are of very good quality, it is recommended to continue project's activities in this field, and to concentrate on the assurance of their availability.

Windlasses: Since most windlasses are in a good condition, it is recommended to continue project's activities in this field and to assure their availability.

Liners: Since almost all liners were in good condition it is recommended to continue project's activities in this field. It is further recommended to survey if subsidences of ground layers can be forecasted.

Lids: Since most of the lids are in a good condition it is

recommended to continue project's activities in this field, and to assure their availability.

Coverplates: Since some coverplates show some holes and cracks, it is recommended to survey whether these problems can be overcome.

Poles: Since shaky poles can result in further damages of the well, it is recommended to set up a maintenance system with regular well-visits, to identify shaky poles in an early stage so that they can be repaired and further damages be prevented.

Aprons: Since most aprons are in a good condition, in general project's policy concerning the aprons can be continued. It is recommended to give extra attention to the leveling, so that the water can flow away and to increase people's awareness and possibilities to repair holes.

Drainage: The same what is said for the aprons, applies for the drainage, with some more emphasis because their condition was a bit worse.

Soakaway: More that half of all soakaway pits are muddy places in rainy season, not able to absorb any more water. Therefore it is recommended to survey other drainage systems.

Wash basins: Most wash basins were in good condition, and are used. To overcome the problem of stagnant water it is recommended to give in construction more attention to the placing of the outlets.

Fence: At places where there is cattle it is recommended to emphasize the PEP on the construction or repair of the fence.

Lubricant: Since lubricant is not applied on poles and hinges because it is not available, it is recommended to try out other lubricants than greese (examples can be vaseline or local materials like leaves that have fat in it). Further the PEP should emphasize the necessity of applying greese and assist in organizing this.

Education: Since education influences the condition of a well positively, the PEP must be developed so that this programme can be executed at all wells.

V.W.C.: Since there is no clear effect of a formed VWC on the condition of a well it is recommended to put more emphasis on the organization of a VWC and on it's backstopping.

Big brake-downs: Since big brakedowns are not reported quickly, it is recommended to emphasize the importance of reporting of breakages in the PEP, and to set up a maintenance system in which all the wells are regularly checked on their condition..

Maintenance: Since regular maintenance seems to have more effect on the condition of a well than it's age or the number of users, it is recommended to set up a maintenance system and additional to this to develop a programme for the well-users on how they can maintain the well in the best way.

Since the maintenance of wells used by schools and Rural Health Centres is executed badly, it is recommended to develop a special education programme for these institutions in which the users own responsibility of the well must be emphasized.

6. Tasks and functioning of the Village Water Committee

6.1 Presence and composition

In Solwezi 20 of the interviewed wells have a Village Water Committee (37%) and in Kasempa 34 of the 57 interviewed wells (65%) have a VWC. They have been formed since the beginning of the project in 1985.
The VWC's in Solwezi are not equally represented by all villages who are using the well (only 20%). In Kasempa there is in 75% of the VWC's a good reflection of the villages who use the well in the committee.
Male and female members in the committee are equally represented in Solwezi. In Kasempa there are twice as many male than female members.
But in both Solwezi and Kasempa District 40% of the individuals interviewed (from wells with- and without VWC's) think there are no women represented in the VWC. So the women's participation in the organization of a well is not known by everybody.
The chairpersons are mainly men (Solwezi 80%, Kasempa 90%). The caretakers in Solwezi are mostly female and in Kasempa male.
On the occupation of the VWC members we found that the majority is subsistent farmer. In Solwezi 35% of the VWC members has employment and in Kasempa only 6%.
When there is no VWC, the organization around a well is done mainly by the villager headmen. Others involved in it are in order of mentioned importance: Ward Chairmen, teachers, chiefs, health workers and well-users.

Conclusions:
Almost half of all wells in both districts have a VWC. In Kasempa there are more VWC's than in Solwezi.
The reason why some wells have a VWC and others not is not known.
In Solwezi most of the VWC's are not a representative cross section
Women's involvement in the VWC's is about 40% in both districts, but not generally known. The leading role of chairman is mostly executed by men.

6.2 Tasks

According to the interviewed VWC's the duties of a VWC are mainly to organize a proper handling of the well and its maintenance. That means practically to organize the cleaning of the well, the repairs to be executed and the funds needed for it.
According to the individuals interviewed, the main duties of a VWC are in order of importance: supervision of the cleaning of the well and its surrounding, supervision on the well use in general, supervision on repairs and the funds for this.
So the VWC members and the other well users do not differ in their opinion on the duties of a VWC.
The duties of a caretaker are not directed to maintenance, only towards cleaning and care of the well.
In general there is no clear idea on what the different tasks in cleaning, care and maintenance are exactly.

Conclusion:
There is no clear distinction in tasks.
There is no clear distinction between duties of a caretaker and of the VWC.

6.3 Functioning

There was found no clear effect of a formed VWC on the condition of a well. (Ch. 5). There are good wells with and without a VWC and the same applies for wells in a bad condition.
On the way they organize things, we found that most of the times meetings of the VWC are organized when something goes wrong with the well. Another reason mentioned to meet was "when all the members are there". 6 VWC's said to meet never. The others say they meet about 4 times per year. Only 8 VWC's meet on a regular basis.
A well-users list is made at 6 wells in Solwezi and at 2 wells in Kasempa. This is done not only in places with a VWC; at 3 wells without a VWC there was also made a list.
Minutes on meetings are not being made in Solwezi; in Kasempa they are only made by 13 VWC's. Reasons mentioned why they do not make minutes are "lack of paper and pens", "we were not told", "the secretary did not show up" and "we do not know how to make them".

Conclusion:
It seems that communities with a VWC are functioning the same way as communities without a VWC. They come together when problems arise, they have no regular meetings, they usually have no well-users list and no minutes.

6.4 Use of information for programme development

6.4.1 Since the organization around a well needs improvement (5.6.1) and since only half of the wells have an organizational structure in form of a VWC, it is recommended:
- to strenghten the organization around wells through the formation of a VWC at every well to be constructed.

Since the users villages are not represented equally in the current VWC's it is recommended:
- to try to make the VWC's have representatives of all villages.

Since women are not equally represented in the VWC's and especially not in the chair position, it is recommended:
- to have an equal representation of women in the VWC's
- to have an equal representation of women in the chair position.

6.4.2 Since the duties of both VWC and caretaker are not defined and devided, it is recommended:
- to define the tasks of care, cleaning and maintaining a well
- to devide these duties among VWC and/or caretaker
- to research whether the function of a caretaker is functionable.

6.4.3 Since the VWC's are not functioning better than informal organizations around a well and since there is no difference in condition of wells with a VWC and wells without a VWC, it is recommended:
- to concentrate the PEP on improving the functioning of VWC'S.

7. Summary

A baseline survey is executed in the beginning of 1989, in order to gain information on the utilization of 120 wells being constructed by the Rural Water for Health Project, in Solwezi and Kasempa Districts.
Another field of investigation was the organization level of the well-users, and the third subject for research was the level of knowledge of the well-users on the relation between hygiene practises and diseases.

This information was needed for the further development of the participation and education programme, which aims at a proper well use and a proper handling of water. On the long run this should lead to sustained facilities and improved living conditions of the users.

Main results:

The main reason why people use protected wells is not the cleanliness of the water, but the nearness of the facility.
About 40% of the well-users make additional use of traditional, unprotected watersources, also for drinking purposes.
The protected well-users use generally more water than the people who only use unprotected water.

For the participation and education programme (PEP) this means that one point of focus should be to increase people's knowledge on the relation between the usage of contaminated water and the occurrence of diseases.

The organization of the communities to handle and maintain the well in a proper way is stimulated by the project through the formation of Village Water Committees. These committees are established at 50% of the wells. They are functioning from very good till very poor and it was found that there was no relation between the existence of a Village Water Committee and the condition of a well.
The condition was also not influenced by the age or number of users.
Only those wells which are used by both villages and governmental institutions like schools and health centres, clearly lack proper organization. The wells as well as the sanitation facilities are mostly of a poor hygienical standard.

For the PEP this implies that the local organization of well-users needs to be strengthened.
The Village Water Committees or any local committee, responsible for the water facility need proper guidelines and practical support in the day-to-day management of the water and sanitation facilities.
Those well-users who are not yet organized in a committee need to be assisted in the formation of it.
And well-users from wells near a school or health centre need special attention in their organization on how to share responsibilities and tasks among the different users.

The level of knowledge on the relation between hygiene practises and the occurrence of diseases is generally higher in Kasempa District than in Solwezi District.
But in Kasempa we saw an arrears in knowledge among the female well-users, who are at the same time the main promotors in the families to change hygienic practises.
Village Water Committee members and community health workers have not more knowledge on the relation between hygiene and diseases than the average user. Only teachers and health assistants have more knowledge in this field.
Diarrhoea is the main disease among the survey population. This is generally more related to dirty food than to dirty water.

The implications of these results for the PEP are that Solwezi District needs extra attention on the occurrence of diseases and its prevention through improved hygiene practises. In Kasempa District the female well-users need extra attention in the education programme, because they usually play a major role in hygiene practises. Increasing capacities on village level to be actively involved in hygiene and sanitation education can only be achieved by training of Village Water Committees and Village Health Workers

The results of the physical status of the well and the capacities of villagers to execute maintenance tasks shows that:
1. Improvement in well design should continue to be a point of focus.
2. Training of the well-users on carrying out maintenance tasks is essential for the sustainability of the facilities.

Translation English-Kaonde, questionnaires for Base-line Survey

I.Questionnaire for Village Water Committee/Local leaders

I.Wipuzha mepuzho ku kabungwe mamuzhi katala pamema/ Batangi Batanyiwa Konka Kwa

Date:.....
Pwerson interviewing:...
Name well:.....
New/ Repaired/ Redeepened
Date completion well:
Depth:.....
Ward:.....
District:.....
Names Persons interviewed
Occupation:.....
Mazhina abantu baipuzhiwa:.....
Nkito yanji:
1.....
.....
2...
etcetera.

1.Is there a village Water committee ? yes no
Kuji kabungwe katala pa mema amuzhi nyi ? ee ine
If yes, erected at (date).....
Inge ee, kale ngewe pa:.....

Names of VWC-members Mazhina aba membala ba mumuzhi katala pamema	M	F	Living in which village Bangikazhi mumuzhi	Occupation Nkito yanji
C/M				
SECR.				
etcetera.....				

2.Names of villages/School/Health C. within wlaking distance from the well.
Mazhina amizhi/Sukulu/Kipatela pomwa konsha kwenda kuya ku mushima.

Names Villages/School/Health-C. Mazhima amizhi/Sukulu/Kipatela	Distance to well Kulepa na mushima minutes	No.of households Nambala yabangi kazhi baji na mazubo mumuzhi	using well bengijisha Mushima	yes ee	no ine
1.....					
2.....					
etcetera up till 30.....					

Translation

Names Villages/School/Health-C. Mazhima amizhi/Sukulu/Kipatela	Distance to well Kulepa na mushima Minutes	No.of households Nambala yabangi kazhi baji na mazubo mumuzhi	using well bengijisha Mushima	yes ee	no ine
.....					
.....					
.....					
etcetera					

3. After construction of the well, did more people settle here yes no
   How many new villages since the completion of the well ?.....
   Pakupwisha kupoya mushima bavula baikajile mu ino mpunzha nye ? ee ine
   Mizhi inga katutulatu mushima apwile ?.....

4. Why are some of the nearby villages not using the well?
   Kika mizhi imo iji kwipi kechi ingijisha mushima ne ?
   .....

5. Is there a well users-list ? yes no If yes, copy it
   Kuji kipepala kinembwapo bengi jisha mushima nyi ? ee ine Inge ee, ikopololai nangu kopololai.

6. What are the duties of a Care-taker?
   Mingilo ka ingila kalama wamushima ?
   .....

7. What are the duties of the Village Water committee ?
   Mingilo ka ingila kabungwe katala pa mema amuzhi ?
   .....

8. If there is a Village Water Committee:
   Inge kano ka bungwe kokaji:

a. When do they meet? never--when something goes wrong -- every .... months
   when the members are around -- others -- namely.....
   Baboma ñana kimye ka? kebamonañana ne -- kanatu kiutu kimo kyatama---
   Myezhi .....yonse-- inge ba membala prbaji -- bikwabo-- bitongolai.....

8.If there is a Village Water Committee:

Inge kano ka bungwe kokaji:

b.How often per year do you meet? .....times per year.

Bamona nana kimye ka pa mwaka ?.....jinga pa mwaka.

c.Is the secretary making minutes? yes no

Munembeshi unemba minsambo yabo nyi ? ee ine

If yes, observe if minutes are good bad

(no translation of this sentence)

If no, why not?

Inge ine, kika kyalengela ?.....

9.Organisation of well.

Lumvwanano lwa mushima.

a.Who organised the villagers to assist in constructing the well ?.....

Nanyi wa kwashishe bangikazhi mukupoya mushima ?.....

b.How did they organise it ? .....

Baumvwanene byepi?.....

c.Who were supposed to assist in the work ?

Bana nyi bafwainjilwe ku kwasha munkito ?

-the future users of the well-- -kulutwe na lwendo bakengijishanga mushima

-anybody that was available -- -yense wajinga po

-every family had to support-- -kila nzubo yafwainjilwe kukwasha

-others,namely ..... -- -bakwabo, bitongolai.....

d.Who organises the cleaning and maintenance of the well? .....

Nanyi utala pa kuwamisha ne kusunga kwa mushima ?.....

e.How is it organised ?.....

Bomvwanana byepi ?.....

f.Who are supposed to do the cleaning ?

Bananyi bafwainwa kwingila ino mingilo:

- cleaning:.....

yakuwamisha:.....

- maintenance:.....

yakusunga:.....

g.Are people who didn't help in constructing the well allowed to draw water from the well yes no

Bantu babujile kukwasha mu kulenga mushima baswishiswa kutapulamo meme nyi? ee in

10.a.What are the major problems concerning the use of the well ?.....

Lukatazho ka lukatampo lutanyiwa pakwingijisha mushima ?.....

b.Are you able to handle these problems? yes no Explain your answer...

Luno lukatazho mwakonsha kwilushinda nyi ? Ee Ine. Bitongolai.....

11. How much money is collected for the well ? Kwacha....
Mali anga omwavwangakenye amushima ? Kwacha.....
For which purposes ?

12. Are the Chief and Ward- Chairman co-operative in water -developments? yes no
If no, what goes wrong ? .....
Ba mfumu ne ba kumupando mu Ward bushe baji na lukwasho mu lumvwānano lwa kutwala bya mema palutwe nyi ? ee ine
Inge ine, kika kyalengela ?.....

13. Assistance of the project.
Bankwasho kufumu kukino kibese.

a. Was it made clear that the village should help in the construction of the well ? yes no
Babulanene mba mizhi yafwainwa kukwa sha mukulenga mushima ? ee ine

b. Did the construction team work in time and properly ?
Bakalenga ba mushima baingijile mukimyo kyafwainwa kaiji ne kwingila mingilo bulongo ?

c. Is the well properly constructed ?
Mushima bamulenga bulongo nyi ?

d. Is the well sited at the right place ?
bamulengela pafwainwa nyi ?

e. Is it made clear how to handle and maintain the well ?
Bemubula byakwingijisha ne kusungu mushima nyi ?

f. Is it made clear <u>why</u> it is important to use the water from the protected well ?
Bemubula kyawamina kwingijisha mema amu mushima nyi ?

g. Did the project-extension workers stick to their appointments ?
Ba kibeso bamingilo balondele milaye yabo nyi ?

h. Did project-extension workers behave well ?
Kaiji bamingilo belamine bulongo nyi ?

i. Did project-extension workers teach in a good way ?
Ne kufunjisha bafunjishisho bulongo nyi ?

j. Did Project-extension workers use pictures ? If yes did they make the subject clea
Baingijishe ne bimwesho bya pa bipepala nyi ? Inge ee,balumbulwile mutwe wamambo bulongo nyi ?

k. Did the project send the theatre group ? If yes,did they make the subject clear ?
Batumine kabungwe kakaya bisela nyi ? Inge ee,balumbulwile bulongo nyi?

l. Did the project assist you right ?
Kaiji bemukwashishe bulongo nyi ?

If the answer is no, ask to explain what went wrong.
(when noting down, first mention the letter of the subject)

14. Do people use the washing basin ? yes no

Bantubengijisha mwakuchapila nyi ? ee ine

If no, why not---inge ine, kika kyalengela

If yes, are they satisfied with the design ? --Inge ee, basekela na ntungilo ya kyo nyi ?

15. Observe the followings:

is not translated in Kaonde, because those questions do not have to be asked, but only to be observed.

Condition of well	good	bad	poor	remarks
bucket				
chain				
windlass				
liners				
lid				
coverplate				
poles				
apron				
drainage				
soak-away				
washing basin				
fence				

Maintenance	yes	no	poor	remarks
lubricant on poles				
lubricant on hinges				
slab clean				
soakaway clean				
wash basin clean				
surroundings clean				
bucket clean				
spare bucket				
big brakedowns (reported in 2 wks)				

Handling of well.

When people draw water, observe:

- do they wash their water-container ?
- do they lower the bucket with care ?
- do they close the lid after use ?

mark how often:	
yes	no

16. Remarks:

Translation

II + III. QUESTIONNAIRE FOR INDIVIDUALS

KEPUZHA PAMUNTU PAMUNTU

Date:..... Person interviewing:.....

Name well:..... Ward:.....District:.....

Person interviewed:Name:..... Age:.....Male Female

Occupation -- Nkinto yanji:.....

Village Water Committee Member Teacher

Woman using the well (no VWC) Pupil (grade 4 or 5)

Woman not using the well Health Assistant

Man using the well (no VWC) Community Health Worker

Name of Village/School/Health Centre interviewung:.....

Jizhina ja Muzhi/ Sukulu/ Kipatela:.....

Distance from the well:.....minutes walk

Kulepa na kumushima (kimye kikebewapa ?).....

II. Number of people around the well on walking distance

Nambala yabantu bakonsha kwenda kufika kumushima

1a. Name of household Jizhina ja bamu nzubo	number of children at home / schoolgoing Banyike		Number of adults Male	 Female	use well yes / no Bengijisha mushima	
	bakunjubo	sukulu	B/bal.	B/kazhi	ee	ine
1.....						
2.etcetera up to						
3.....						

1b. Why are some of the nearby villages not using the well ?.....

Kika mizhi imo´iji kwipi kechi ingijishamisha ne ?.....

2a. Numbers of scholars ansd teachers.

Nambala ya bana ba sukulu ne bafunjishi.

	no.of Children nb.ya Banyike	no.of Adults male/female nb.ya Bakalumpe B.bal./B.kazhi	Using well yes no Bengijisha mushima e i
grade 1			
grade 2 etcetera up till 7			
Total Teachers			

2b. Is it a boarding school ? yes no

Bushe sukulu ulalako banyike kimye kya kufunda nyi ? ee ine

If yes, how many boarding students are there ?.....

Inge ee, banga bana basukulu balala pasakulu ?.....

week-boarding normal boarding

ya pa mulungu anyi mwaka yense

3a. Number of people in the Health Centre

Nambala ya bantu mu Kipatela.

	Children		Adults		Using well	
	Under 5	Schoolgoing	Male	Female	Yes	No
	Banyike		Bakulumpe		Bengijisha	Mushima
	Under 5	Schoolgoing	B.balume	B.kazhi	Ee	Ine
Patients per day						
Bakolwa pa juba						
Heath workers per day						
Bamingilo mukipatela pa juba						

3b. Does the centre have beds ? yes no

Kipatela kiji myanya ? ee ine

If yes, how many in-patients per year ?.....

Inge ee, banga bobabika mumyanya pa mwaka ?.....

3c. What are the main diseases ? .....

Biklola bitanyiwa juvala bika ?.....

3d. Give numbers of people who suffered from the following diseases.

Tongolai nambala yabantu bakolelwe bino bikola

	1986	1987	1988	
diarrhoea				
malaria.....				
etcetera.....				

Translation

III.BEHAVIOUR AND KNOWLEDGE CONCERNING WATER-USE

BIMWESHO NE KUYUKA PAMAMBO AKWINGIJISHA MEMA.

1.Does the family leave the home a long time for shifting cultivation ? yes no
Ba muvilukila kumaji minyi ? ee ine
If yes, which periods?..... Inge ee,, kimye ka ?
how many people stay behind banga bashala nakwikala
in the village ? ..... mumuzhi ?.....

2.Observe if the household has a radio bicycle roofing sheets.

3.What water sources are you using ?

3.Ia.Are you using water from the protected well ? yes no
Mwingijisha mema mumushima wa shamendeniji ? ee ine
If no, why not--Inge ine, mamboka ?.....
If yes, why ?-- Inge ee, mamboka ?.....

3.Ib.For what purpose ? drinking coocking bathing laundry irrigation
Mwingijisha kuka ? kutoma kuteka kowa kuchapila kutekezha

3.Ic.Usage per day .
1 container to collect water is ....liters.--Mbekete kutapwilamo ma lita....
Per day ..... containers are collected. --Pa juba mabekete kutapula.....

3.Id.When do you collect water from the protected well ?
Kufuma kuuno mushima ?
- what times of the day -- bimye pa juba:.....
- how many days per week -- buma anga mumulungu umo ?.....
- which time of the year -- munanya kimye kyamumwaka ?
only in the dry season only in the raining season the whole year others
kanatu kisalo kanatu mayoo mwaka yense nebikwabo

3.Ie.Tell me what you think about the waters:
Mbulai mema byoaji:

	good awama	bad atama	in betwee pakachi
cleanliness --kutoka			
taste --kunvwanyikamu			
colour -- kanwa			

3.If.Who owns the well ?-- Nanyi mwina mushima ?.....

3.IIa.Are you using water from other sources ? yes no
Mwingijisha mema kufuma kukwabo ? ee ine
If no, etcetera, see above, at 3.I.

3.IIb. see above at 3.Ib.
3.IIc. see sbove at 3.Ic.
3.IId. see above at 3.Id.
3.IIe. see above at 3.Ie.
3.IIf.Which other water sources are you using ?.....
Mutapula kwepi mema ?

4.Maintenance and handling of well and water.

Byakusunga ne kulama mushima ne mema.

4a.Do you know how to draw water from the well ? --Mwayuka bya kutapula mema mumushi
first wash hands wash bucket lower bucket with care close lid after
patanshi ovwai kumaboko ovwai mbekete twezhai mbekete bulongo shinkai kizhiko pakup

4b.Do you know why it is important to handle and maintain the well properly ? yes no
Mwayuka kintu kikatampe kyanemena kusunga ne kulama mushima bulongo ? ee ine
If yes, give reasons --Inge ee, lumbululai mitwe.....

4c.Do you know how to maintain the well properly ? yes/no. If yes say how:.....
Mwayuka byakusunga bulongo mushima nyi ? ee/ine. Inge ee,mujishinda ka:.....

4d.Do you know how to repair cracks and loose standpoles ?yes/no.If yes,say how:.....
Mwayuka byakuwamisha mwalalaika ne bichi inge kebitenkene byaimana nyi?
Inge ee, mujishinda ka:.....

4e.How much costs a bag of cement ? -- Jisaka shamende jipotwa mali anga ? Kwacha....

5.Sanitation.

Kwisungu bulongo.

5a.What is the number of latrines in the village (school/health-centre)?.....
Bimusu binga biji muuno muzhi (sukulu/kipatela)?.....
Do you have a latrine ? -- Muji nu kimbusu nyi ? yes no--ee ine
If yes, observe how it looks like: clean ☐ in use ☐
dirty ☐ out of use ☐

5b.What is the number of rubbish pits in the village (school/health-centre) ?.....
Bimbo binga byakutayamo biswaswa biji muuno muzhi (sukulu/kipatela)?.....
Do you have a rubbish pit ?--Muji na mwakutaya biswaswa ? yes no--ee ine
If yes, etcetera, see above.

5c.Do you know why a latrine is used ?
Mwayaka kyotwingijisha bimbusu ?

- for a clean suurounding
- to prevent diseases
- to prevent animals and children eating shit
- for shelter when raining
- for privacy
- to show others I/they know about cleanliness
- because they were told to use it
- .....

5d. And a rubbish pit ?
Ne kimbo mwakuya biswaswa

- for a clean compound/house
- to prevent diseases
- to prevent animals and children eating rubbish
- to keep insects away
- to show others I/they know about cleanliness
- to serve as manure
- .....

5e.Observe if the compound near the house is clean ? yes no remarks:.....

5f.Observe if the whole village is clean yes no .remarks.....

5g.What is done to keep the village (school/health-centre) clean ?.....
Kika kikebewa pa kuba mba muzhi (sukulu/kipatela)?.....

5h.Do you know why the compound should be clean ? Explain your answer.
Mwayu kyawamina muzhi kwikala watoka masuko ? Bitongolai:.....

5.Hygienic use of water.

Byakwingijisha mema mujishinda dawama.

	yes	no
6a.Observe if water is stored in a clean container		
water container has a lid/cover		
one special spoon is used to draw water		
fingers touch water when drawing water		

6b.Do you know why the water should be very clean ?--Mwayuka kyawamina mema kwikala atok

If yes, why? -- Inge ee, kika ? -we don't like dirty water
-dirty water causes diseases (no translation)
-other reasons:.....

6c.Do you know how to prevent dirt coming into the water stored in the house(school/ Mwayaka byakukanya biko kutwela mumema omwasunga munzubo (sukulu/kipatela) healt

- Store the water in a cool place
- The container must be clean
- The bucket for collecting water must be clean
- A special cup/spoon must be used to draw water out of the container
- The water must not be touched with the hands.
- Prevent things falling into the container, use a lid/cover.
- Others, indicate:.....

7.Personal Hygiene.

Byakwilama atweba bene.

7a.Do you know <u>why</u> it is important to keep the house (school/health-centre), the kitchen, the children and the body clean ? .....

Mwayuka kyanemena inge satusunga nzubo (sukulu/kipatela), motutekela, bana ne mibiji, sayatoka bulongo ?.....

7b.What is important when cleaning the body ?.....

How often must it be done ?.....

Kika kyanema kumuntu pa kuwamisha mubiji wanji ?.....

Kabije jinga ?.....

7c.How should someone clean the house ?----Muntu wafwainwa kuwamisha byepi nzubo (suku (school/health c.) kipatela)

How often ?..... -- Kabije jinga ?.....

7d.How should one clean the kitchen-utensils, plates, etcetera ? And how often ?

Muntu wamisha byepi mwakute kela ne bya kwingijisha masanyi nebikwa botu ?

Kabije jinga?

7e.What is important when cleaning and bathing the children ? How often must it be done

Kika kyanemena paku wamisha ne kowvwa bana ? Kabije jinga ?

8.Health Situation --Mwekelo yawama.

8a.Did one of your family (school/health c.) suffer from diarrhoea last month? yes no

Umo wamwi anweba (banaba sukulu/ba kulwa) wabelelepo kupolomya awe mwezhi wapwa ?ee/

8b.If yes, how many persons -- Inge ee, banga bantu. their ages --ne myakayabo.

8c.What is the reason that people get diarrhoea ?

Kika kine kintu bantu kyo bakolelwa kikola kya kupolomya ?.....

9.Organisation -- Lumvwanano.

9a.Do you have a Village Water Committee ?--Muji na kabungwe katala pa mema nyi ? ee

If yes, what do they do ? -- Inge ee, boba kika ?

are women member of the VWC ? -- kupoloma awe mwezhi wapza ? ee

explain why/ why not -- bitongolai

If you have no Village Water Committee; who organises matters concerning the well ?

Inge kechi muji nakabuungwene nanyi utangijila mubyambo bya mushima ?

Are both women and men assisting in the organisation ? yes no

Bonse banabalume ne banabakazhi bakwasha nyi ? ee ine

If yes, in which way ? -- Inge ee, mujishinda ka ?

9b.Who selected the site of the well ? -- Nanyi wasajile pakupoyela mushima ?

9c.When making the well, did all the well-users contribute to the work ? yes no

Kimye kya kupoya bonse babena tapula baingiji lekonyi ? ee ine

If no, does it create problems ?Explain-- Inge ine, kileta lukatozho nyi ?Bitongola

In the construction, what was the contribution of: -- Mingili ka yainyijile:

the men:..... banabalume :.....

the women:..... banabakazhi:.....

Was this contribution sufficient ? Explain your answer.

Bantu baingijile mokyafwanwa ? Lumbululai bwasuko bwenu.

9d.Now you are using the well, do all paople who are using the well, help in cleaning, repairing breakages and do they handle it with care ? yes no

Pano mubena kwingijisha mushima kokunvwa mba bonse babena kwikwasha mu kumamisha kulungisha ne kwingijisha bulongo nyi ? ee ine

If no, does it create problems? If so mention them :.....

Inge ine, kileta lukatazho nyi ? Inge kyakine atongaulai ano makatazho:.....

9e.Did you ever pay money for the well ? yes no

Mwakipanapo mali nyi pa mushima ? ee ine

If yes, how much? Kw.....And for what?...---Inge ee, anga?Kw.... A byepi?.....

Do you have suggestions how money can be collected for when the well needs repairs ?

Muji na milanguluko mwakumwena mali inge mushima kakebewe kulingishiwa ?

- How to organise it and by whom ?

Mwafwainwa byepi nangwa mwa kwiamwena, mujishinda ka ne nanyi wafwainwe kutangijil

-What is a good time of the month/year to collect money ?

Kimye ka kyawamisha ku sonkakanya mali ?

- How much money can you pay and how often ?

Anga mali omwakonsha kupana kabiji jinga ?

9f.What is the contribution of men and women in the following activities ?

Mingilo ka yamwesha ba balume ne bakazhi mu bino bintu ?

- collecting water - mukusenda mema
- cleaning the well - mukuwamisha mushina
- maintaining and repairing the well - mukusunga ne kulungisha mushima

Is the contribution of men and women sufficient ? yes no. Explain.

Mingilo ya banabalume ne banabakazhi yailamonyi ? ee ine. Kumbululai

9g. Are you satisfied with the way the well is functioning, maintained and repaired ?
Mwasakela mujishainda mushima mobamwijishasha ba musungilamo kabiji ne moba mulungish
If no, what goes wrong ? -- Inge ine, kika kyatama ?

These questions are for people using a protected well
Ano mepuzho abantu babena kwingijisha mishima washamende.
What are the differences between a protected well and other water sources, concernin
Mbenakukeba kuyuka lupusano lujipo kutapula mema etu kufuma mushima ne kutapula mema kukwabo

10 a. Time. Which source takes more time to collect water ?
Kimye. Kwepi kutaiwa kimye pa kutapula ?

10b. Efforts. When you are at the source, which source is more easy to handle for drawing water ?
Ngovu. Kwepi kwapela kutapula bukiji kutapula mema ?

10c. Quantity of water-use. Since you use the protected well, are you using
more water less water the same quantity
Kwingijishiwa kwa mema. Pomwatatwijile kutapula mema amushima wa shamende mwingijish
mema avula acha che anyi pamotu

10d. Purposes of water use Since you use the protected well, are you using the water for other purposes than before ? yes no
For which purposes ?
Mwakwingijisha mema. Pomwatatwilo kwingijisha mema mumushima washemende, mubena kwingisha mema kubintu bikwabo kukila kala nangu kunyuma ? ee ine
Akwingisha kuka ?

10e. Health. Since you use the protected well, is there less diarroea in your family (school-health centre) ? yes no
Kukosakwamubiji.
Pomwatatwijite kive ngijisha ano mema? Kikola kya kupolomya kya ke panako munzubo yenu ? ee ine

Important Remarks:.. .....
Mitwe ikatampe:..... .....

Thanks.
Nasanta.