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WATER SUPPLY AND SANITATION

A baseline study in seven villages
in Kandal and Kampong Speu
Kampuchea

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WATER SUPPLY AND SANITATION

A baseline study in seven villages
in Kandal and Kampong Speu
Kampuchea

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This report was prepared for the UNICEF-assisted Rural Water Supply
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1. INTRODUCTION

The water supply and sanitation programme

The UNICEF assisted water supply and sanitation programme, implemented by the Ministry of Health, started in 1981 with the rehabilitation of water supply systems for hospitals and other vital institutions, which had been destroyed during the 1970-1978 period.

In 1985, a first project phase was developed for a rural water supply and sanitation programme. Aim of the programme is to contribute to a reduction of water and sanitation related diseases through the provision of safe and accessible water supply and sanitation facilities in the rural areas. Project components consist of:

- construction of village water wells equiped with handpumps;
- construction of household latrines;
- hygiene and sanitation education.

Project area and village characteristics

The first project phase (1986-1988) includes seven districts or "Sroks" in two provinces:

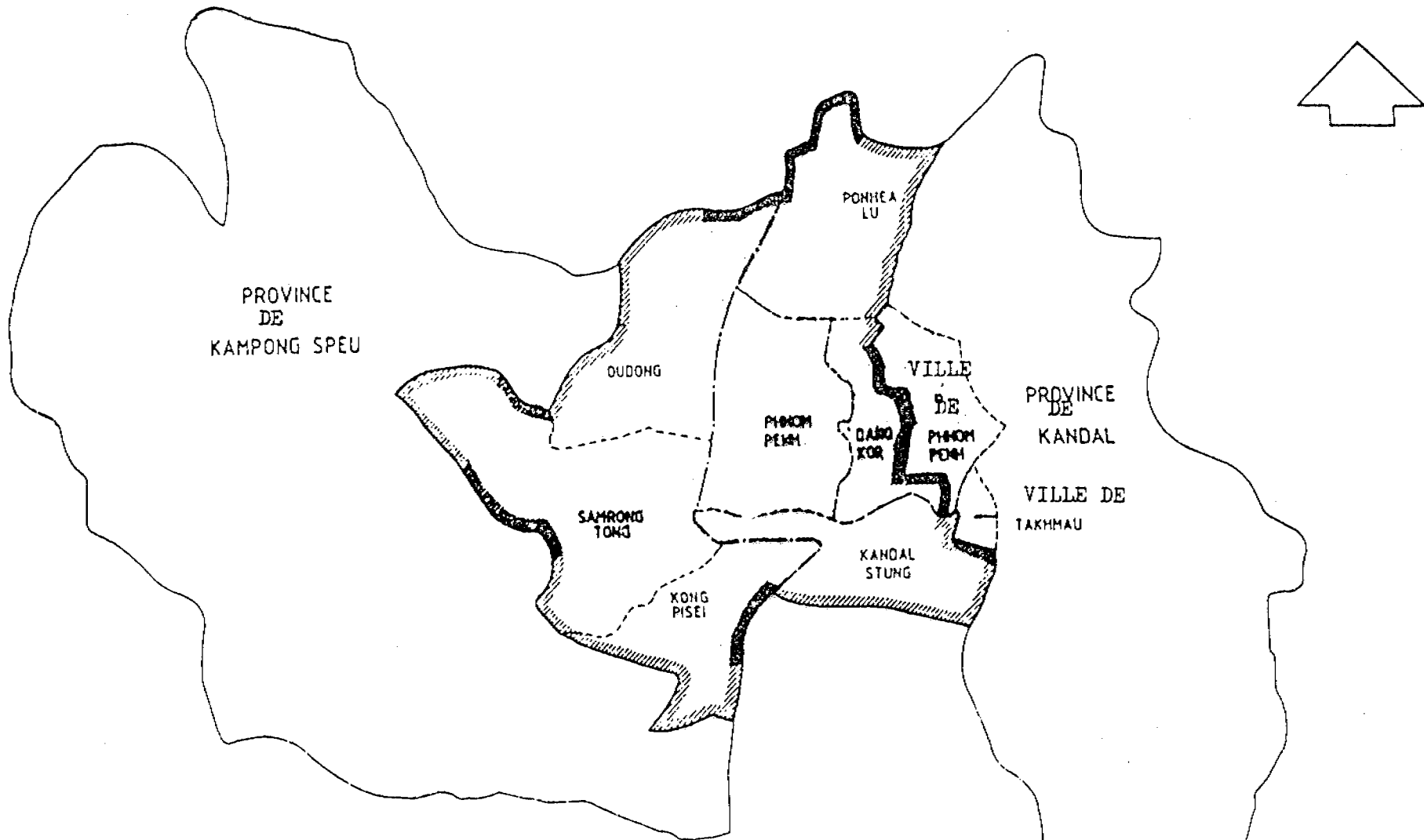
Kandal Province:	Srok Phnom Penh Srok Ponhea Lu Srok Kandal Stung Srok Dangkar (since the end of 1986 part of the capital city Phnom Penh)
Kampong Speu Province:	Srok Oudong Srok Samraong Tong Srok Kong Pisei

The seven districts cover an area of about 3000 km², immediate north, west and south of the capital city Phnom Penh (see map on page 2). According to 1985 figures, the total population is about 400.000, distributed between 1403 villages ("Phums") which are grouped in 101 communities ("Khums").

The project started with a short investigation to assess the present water supply situation in the villages. Based on this investigation, villages could be classified in two main categories:

- villages with abundant surface water available at a short distance during the whole year;
- villages with a lack of water, especially during the dry season.

About 60% of the villages and 70% of the total population belong to the second category. Of these villages, some 500 have unprotected hand-dug wells, either in use or abandoned, and some 50 villages have drilled wells from the sixties, most of them presently abandoned.



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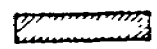
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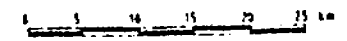
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DELIMITATION DU SITE DU PROJET, PHASE N° 1 à 8
(PROVINCES DE KANDAL ET DE KAMPONG SPEU, KAMPUCHEA)

SITE VISITE A L'OCCASION DE MISSIONS D'EVALUATION
SUR LE TERRAIN

Echelle:



Carte N° 1:

Dessin du site du projet
Programme d'approvisionnement en eau et
d'assainissement de
l'UNICEF, 1985-1988

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Project implementation

Water supply activities include rehabilitation of wells where possible and drilling of new wells where necessary. All wells will be equipped with a handpump (India mark 1 or 2). Selection criteria for the villages are as follows:

- walking distance to a permanent source of safe water is more than 500 metres for villages with a population of over 200;
- walking distance to a permanent source of safe water is more than 1000 meters for villages with a population of 150-200.

One well with handpump is provided for up to 400 people.

Implementation started in the second half of 1985. Up till November 1986, about 250 wells have been constructed and pumps installed. Latrine construction, for the present in one village, started in September 1986. The target for 1988 is to construct 1000 wells for 300.000 people (75% of the project area's population) and to construct 50.000 household latrines. Manpower training will include well drilling and digging, handpump installation and maintenance. At village level, water supply and sanitation committees will be formed which will be responsible for the day-to-day care of the handpump and the promotion of personal and environmental hygiene.

Baseline survey

One of the planned activities in support of the programme is a socio-cultural baseline survey in the present project area. The purpose of the survey is threefold:

- to provide baseline data for the design and development of the hygiene education component of the programme;
- to provide guidance to the design and implementation of the sanitation component of the programme, particularly latrine construction;
- to provide baseline data for any future evaluation of the programme.

An additional purpose of the baseline survey is to strengthen the research capability of staff of the Ministry of Health.

The survey should provide baseline data with respect to:

- daily patterns of water collection and water use;
- walking distance to water sources;
- incidence of water and sanitation related diseases;
- human waste disposal.

The baseline survey was carried out in October 1986 by the Centre National d'Hygiène et d'Epidémiologie (CNHE) under the Ministry of Health in co-operation with the International Reference Centre for Community Water Supply and Sanitation (IRC). The results of this survey are presented in this report (Chapter 3-7). In chapter 2, the selected methodology is briefly outlined.

2. METHODOLOGY

Preliminary investigation

To determine the relevant issues and questions for the baseline survey, key interviews were held with representatives of:

- the Ministry of Health;
- the Health Department of the Kandal Province;
- the Women Association (Association des Femmes);
- the Directorate of Mother and Child Care (Direction Protection Maternelle et Infantile (PMI));
- the RINE Programme (RINE equals Rehydration, Immunisation, Nutrition and Education).

In addition, short visits were paid to six villages, three in Srok Dangkor and three in Srok Samraong Tong. Information was gathered through observations, group discussions and discussions with individual household members. Also, informal meetings were held with Khum and Phum representatives. One health centre (infirmérie) was visited to allow the consultant to get an impression of the local health system and the registration system used for patients visiting the centre.

The preliminary investigation indicated a number of possibilities as well as restrictions with regard to the baseline survey:

- During the rainy season, water collection and water use patterns are rather complex in most villages, due to the fact that various water sources are available within a relative short walking distance. For this reason, it was decided not to include observations to collect data on this subject, as this would go beyond the time set for the present study.
- It proved to be difficult to find reliable socio-economic indicators to classify villages and households. As an aftermath of the 1970-1978 period, the physical outlook of houses provides insufficient indication. Landownership and agricultural produce also do not provide suitable indicators, the farming system being of a collective type. The general impression was that socio-economic differentiation is relatively small, though existent. Therefore, for this survey, the ability to buy soap and the number of jars per household are used as tentative indicators.
- Within the available time, it was not possible to find suitable indicators to classify kitchens and to collect data on food handling. An additional study may be necessary to cover these aspects.
- No restrictions were encountered in discussing subjects related to defecation practices, neither in groups, nor with individual household members. Also, there was no objection for men to discuss these subjects with women.

Preparation of questionnaires

Four draft questionnaires were developed:

1. Questionnaire for the village chief (Chef de Village).
Purpose of this questionnaire was to collect general data on village characteristics. At the same time, the questionnaire was used to determine to what extent village chiefs could provide useful baseline data on the water supply and sanitation situation in their villages. (See annex 1)
2. Household questionnaire.
This questionnaire included questions about water collection, storage and use, the walking distance to various water sources, the incidence of water and sanitation related diseases and sanitation practices. (See annex 2)
3. Latrine observation sheet.
This sheet was to be used in addition to the household questionnaire in case a family had a latrine at its disposal. (see annex 3)
4. Health centre information sheet.
This sheet was developed to collect information about the incidence of water and sanitation related diseases. At the same time the sheet meant to provide information on available health staff at Khum level. (See annex 4)

The draft questionnaires were discussed and adapted where necessary in a general meeting with representatives of the Ministry of Health and the Programme Officer of UNICEF.

All questionnaires were translated into Khmer. As this was done as a group effort, it was not deemed necessary to retranslate the Khmer version into French to check its accuracy.

The questionnaires were only tested during the training of the interviewers. In retrospect it would have been an advantage to also had them tested in a village as it would have permitted some simplifications (for example, the questions on water source selection and storage of water) and an improved lay-out of the household questionnaire.

Training of interviewers

Ten people were trained as interviewers. The group comprised doctors and pharmacists, all working within the Ministry of Health.

Training took half a day and included:

- an introduction to the Water Supply and Sanitation Programme;
- an introduction to the purpose of the baseline study;
- a short interview training; and
- a practice run of the various questionnaires/information sheets.

Selection of villages

Together with representatives of the Ministry of Health and the Programme Officer of UNICEF it was decided to select eight villages in two districts: Dangkar and Kandal Stung. It was agreed that the selection of villages should reflect the different characteristics with respect to:

- water sources (well, river, pond, canal);
- distance to a main road; distance to Phnom Penh;
- future ratio population-pump.

Prerequisite would be that no project activities were started as yet in the villages to be selected.

In selecting villages, use was made of available village data collected during the short investigation at the start of the programme (see Chapter 1). Selection of villages proved to be difficult as the villages were not easy to classify, especially with respect to water sources and distance to a main road, and a considerable number of villages was already affected by the programme.

Of the selected villages, two happened to be inaccessible due to floods caused by heavy rains and therefore were replaced by two others. However, one of these villages had to be struck off the list as it did not fit the selected criteria.

In view of the sampling restrictions and problems mentioned above and the total number of villages selected, the results of this study cannot be simply extrapolated to the whole project area.

Selection of households

As the household situation appeared to be rather homogeneous per cluster of houses, it was not deemed necessary to include all village households in the sample. Instead, it was decided to interview an equal number of households per village for easy comparison. In each village, 30 households would be interviewed to ensure that the sample would also be representative for the more populated villages.

Two sampling methods were tried out:

One of the methods used was to walk through the whole village, guided by the village chief and to assign each interviewer to a cluster of houses where she/he interviewed three households at random (for example, every second or third household, dependent on the total number of households in the village). The advantage of this method was a general overview of the whole village before interviewing was started. The method seemed to be without risks as each village chief has an intimate knowledge of his village, and villages are generally small and easy to survey. However, once this method almost produced a sampling mistake when the village chief originally introduced us to the old village only because he considered a newly built neighbourhood as distinct.

The second method involved a random sample drawn from the village registers which contain up-to-date information about the number of households per village, including the names of the household members. Sampling details are presented in Annex 5. This method worked without any problem.

For any future quantitative study, it is recommended to combine both methods. An observation walk through the whole village will allow for a better idea of the local situation and daily practices of the village population. The use of the village register will give more confidence about the representativeness of the sample.

Field-work

Before visiting the villages, the authorities at Srok, Khum and Phum levels were informed about the forthcoming survey and their permission and cooperation obtained. Also the Women Association (Association des Femmes) was informed and often one of their representatives was present in the village to aid the interviewers.

Field-work was done per village, allowing the interviewers to work as a team, what was felt to be an advantage. However, this approach prevented the chance of getting a deeper understanding of local practices and circumstances as the the visit never took longer than half a day.

For the household survey, preference was given to interviewing the woman of the household in view of her role in water and sanitation. When she was not present, another household member above 16 years of age was interviewed. Dependent on the number of children in the household, an interview took 30-45 minutes.

Completed questionnaires were checked by the interviewers themselves, followed by a routine check by one of the authors. This turned out to be a valuable procedure, contributing to a higher quality of data-recording.

Data processing

Tabulation of data was done by hand on data collection sheets. As the whole interview team was involved in this activity, this did not take more than a couple of days. Then all data were entered in a computer, using the D Base III programme. This took much more time as did the computer analysis, mainly due to being unfamiliar with the ins and outs of D Base III. In retrospect, preference should have been given to data analysis by hand. Not only this would have permitted a collective analysis by the corporate team, but also would have produced much quicker results.

Time and manpower inputs

A rough estimation is given of the time and manpower inputs used to complete the baseline study. The total number of working days amounts to 143 and is made up of the following:

- Staff CNHE and Consultant IRC 55 working days
(preparation of the study; translation of questionnaires; training of interviewers; data collection and analysis; report writing)
- Interviewers 70 working days
(training; data collection and tabulation)
- Data input in computer 10 working days
- Typing 8 working days
(French and Khmer questionnaires; French report)

Total: 143 working days

3. THE SAMPLE POPULATION

The villages

All seven villages included in the baseline study are situated within a one-and-a-half hour drive from the capital city Phnom Penh. Five belong to Srok Dangkor and two to Srok Kandal Stung.

The number of inhabitants ranges from 193 in Kap Kong to 415 in Prey Kei, with an average of 283 per village. The average household size is 4.1 and the average man-woman ratio is 100:130. Population details are summarized below.

Table 1: Population characteristics of the sample villages

Srok	Khum	Phum	No. of inhabitants	No. of households	No. of women	No. of men
Dangkor	Kraign Thnong	Prey Moul	222	48	115	107
Dangkor	Chom Chao	Kap Kong	193	51	120	73
Kandal Stung	Bakou	Kmut	252	63	141	111
Kandal Stung	KÔk Trâp	Char	328	81	193	135
Dangkor	Kraign					
	Pong Ro	Prey Sampor	211	48	n.k.	n.k.
Dangkor	Dangkor	Bakou	361	82	211	150
Dangkor	Phlœung					
	Chhès Rotès	Prey Kei	415	84	223	192
Total			1982	457	1003	768

n.k. = not known

Houses are generally made of wood, leaves and/or corrugated iron. Whereas elevated houses are preferred, they are expensive to build and many households live at ground level, especially since the 1970-1979 period. Houses consist of one or two rooms, sometimes more. Kitchens, sometimes not more than a place with three fire stones, are situated in, under, leaning against or detached from the house. With the exception of Char, all houses are surrounded by a big or small yard.

In all villages but Kap Kong stagnant water is a common problem during the rainy season. Household waste does not give any trouble as yet as most waste is organic and thrown in a compost pit. Occasionally rats and mouse are a nuisance.

The main source of income is rice cultivation. Three villages (Kmut, Char and Prey Sampor) have two yields a year. Fruit and vegetables grown in the yards or gardens near the houses provide an important secondary source, often for household consumption only, and sometimes also for the market. To what extent livestock (cattle, pigs, chickens) are important beyond subsistence level is not known. Other economic activities include small-scale production of palm sugar, sack-weaving from palm leaves, fishing and sale of fish. In Kap Kong, one third of the male population works as "bicyclette porteur" in Phnom Penh from October to December.

The distance from the villages to a main road is only considerable for Prey Moul, whereas Prey Kei is situated along the main road. Bakou is built alongside the river. The walking distance between the centre of each village and the nearest primary school and health post (infirmierie) nowhere exceeds two km. Details are given in the table below.

Table 2: Walking distance between the centre of each village and the nearest primary school and health post

Village	Distance to primary school	Distance to health post
Prey Moul	1500 m	800 m
Kap Kong	1500 m	900 m
Kmut	2000 m	2000 m
Char	1500 m	2000 m
Prey Sampor	1250 m	1050 m
Bakou	50 m	1200 m
Prey Kei	10 m	200 m

The households

The baseline study included 30 households per village, with the exception of Prey Sampor and Bakou where only 29 households could be visited. In total, the study covers nearly half of all households, that is 208 out of 457. Table 3 presents an overview of the number of households and household members covered by the study.

Table 3: Number of households and household members included in the baseline study

Village	No. of households	No. of household members
Prey Moul	30	146
Kap Kong	30	135
Kmut	30	147
Char	30	126
Prey Sampor	29	143
Bakou	29	143
Prey Kei	30	154
Total	208	994

The 208 households comprise 564 women and 430 men, resulting in a men-women ration of 100:131. The number of households without a male adult is 33 (or 16%). The average household size is 4.7 with four one-person households and seven households with nine members or more. About 58% (or 120) families have one or more children with the age of 0-5 years old.

As discussed before in Chapter 2, preference was given to interview the female heads of the households. As a result, 159 (76%) of the respondents were female. For future studies, it might be considered to select a larger proportion of men, especially with respect to those subjects where the opinion and experience of men may differ from that of women (see for example Chapter 6).

The majority of houses in the sample have been built at ground level (141 or 68%), have walls made of woven palm leaves (131 or 64%) and thatched roofs (124 or 60%). The number of elevated houses constructed of wood with roofs of corrugated iron or tiles is 43 (20%) and are mainly found in Prey Moul, Prey Sampor and Bakou.

All households except 16, of which 11 in Char, grow fruit and/or vegetables. Bananas are most commonly grown, as the following table shows.

Table 4: Number of households growing fruit and/or vegetables

Produce	No. of households	%
Bananas	168	81%
Palm trees	12	6%
Other fruit	134	64%
Vegetables	53	25%
Nothing	16	8%
Total	208	100%

Cattle, pigs and chickens are found in all seven villages, although not at all households. About 77% (or 160) have chickens, 75% (or 156) have cattle and 34% (or 71) have pigs. Cattle and pigs are always kept near the house, mostly tied with a rope. However, occasionally pigs are left free and may be found around the house. Animal droppings are collected and thrown in a compost pit.

4. WATER SOURCES

Especially in the rainy season (September-November), several sources are used to satisfy the water needs of the human and animal population in the seven villages. When looking at water use for human consumption (drinking and food preparation), the main sources used in the various villages are as follows.

Table 5: Main water sources used for human consumption per village

Village	Water source*				
	rain	well	pond	canal	river
Prey Moul	•		•		
Kap Kong	•	1	•		
Kmut	•	3			
Char	•	1			
Prey Sampor	•	3			•
Bakou	•				•
Prey Kei	•	9	•		

* A dot indicates water use by more than two households in the village. A number indicates the number of wells used by more than two households in the village.

The data on the table above are based on the household questionnaire. Data collected through the village chief questionnaire would have produced more or less the same overview. However, the additional use of pond water in Prey Kei and well-water in Kap Kong was only revealed through the household survey. Thus, the use of a village chief questionnaire may be considered as a quick and easy method to collect basic data on the main water sources used for human consumption. At the same time, it shows that such a questionnaire does not allow for more specific information, necessary, amongst other things, for the planning of community-based hygiene education activities.

Rainwater

Rainwater is collected from the house-roofs in jars. These jars may contain 80-180 litres, dependent on their size. It has become clear that collecting and using rainwater is a general preference. This conclusion is not only from direct observations in the villages (see picture), but also from statements, such as "the main water problem in our village is lack of jars". Table 5 presents an overview of rainwater used per village.

Table 6: Rainwater use per village (N=208)

Village	Number of households			
	Human consumption only	Human cons. + bathing/laundry	Human consumption + bathing/laundry + cattle	Total human consumption
Prey Moul	8	16	4	28
Kap Kong	16	10	2	28
Kmut	9	7	0	16
Char	7	3	0	10
Prey Sampor	17	5	0	22
Bakou	15	9	1	25
Prey Kei	17	6	0	23
Total	89 (43%)	56 (27%)	7 (3%)	152 (73%)

Of all households in the sample, 56 (or 27%) do not use rainwater at all. Lack of jars and nearby wells seem to be the two main reasons.

The above table shows that rainwater is primarily reserved for human consumption. The main reasons given are custom * (43%) and taste (40%) followed by the closeness to home (32%). Water hygiene was mentioned by 24% of the respondents **.

Reasons put forward for the use of rainwater differ somewhat per village, probably dependent on the other sources available. In Prey Kei, the village with nine wells, taste proves to be all important. In Kap Kong, the village with a poor quality well, hygiene scores high. Both in Kap Kong and Prey Moul, where ponds are at a considerable distance, closeness to the house is a more important reason.

Despite a strong preference for rainwater and the tendency to serve it for human consumption, most households have to rely also on drinking water from other sources, even in the rainy season, as the storage capacity is often not sufficient to bridge the time between two rainfalls. The data presented further will illustrate this point.

Well-water

In the rainy season, wells are an important water source in four of the seven villages. About 36% (or 74 households) use well-water for human consumption and about 42% (or 88 households) use well-water for bathing and laundry. Table 7 provides the details.

* Custom may be considered as a valuable indicator in as much as it helps us to realize that people may be very much accustomed to a particular water source without giving it second thoughts. However, the answer "custom" does not reveal much information on criteria for water source selection.

** Many respondents mentioned more than one reason. Percentage is taken from N=152, that is all respondents who use rainwater.

Table 7: Well-water use per village in the rainy season (N=208)

Village	Number of households						
	Human cons. only	Human cons. + bathing/laundry	Human cons. + bathing/laundry + live-stock	Sub total human cons.	Bathing/laundry	Bathing/laundry + live-stock	Total
Prey Moul	0	1	0	1	0	0	1
Kap Kong	1	0	0	1	2	0	3
Kmut	1	15	1	17	5	2	24
Char	8	16	0	24	3	1	28
Prey Sampor	2	15	0	17	9	0	26
Bakou	0	0	0	0	0	0	0
Prey Kei	0	10	4	14	7	0	21
Total	12	57	5	74 (36%)	26	3	103 (50%)

The distance to the nearest well is less than 100 metres for 72% of the households using well-water. For nearly 44% of these households, the distance does not exceed 50 metres. Especially in Prey Kei the wells are very close to the houses. Only three households have to walk over 250 metres, of which one 300 metres (in Char) and two 500 metres (one in Char and one in Prey Sampor).

The reasons most frequently put forward for the selection of well-water are quantity and custom, with respectively 49% and 45%. Taste and clarity (= colour) score low, which may not be surprising, as well-water in Kmut is generally muddy and well-water in Char contains a lot of iron. In Prey Kei, we already assessed a clear preference for rainwater because of its taste. Hygiene does not seem to be an important consideration anywhere.

In the dry season, the percentage of households using well-water increases to 57% (or 119) for human consumption and 60% (or 125) for all purposes. Table 8 shows a breakdown per village (see next page).

The table clearly shows the difference between Kmut, Char and Prey Sampor where nearly all households rely on well-water during the dry season and Bakou and Prey Moul where all households have to fall back on surface water (as will be further discussed on the following pages).

As in the rainy season, water hygiene scores low as reason for the selection of well-water. In Kap Kong, the village with the poor well, the score is even zero. Again the most important reasons for the selection of well-water are quantity and custom. For Prey Sampor, closeness to the house is an additional important consideration.

Table 8: Well-water use per village in the dry season (N=208)

Village	Number of households						Total
	Human cons. only	Human cons. + bathing/laundry	Human cons. + bathing/laundry + live-stock	Sub total human cons.	Bathing/laundry	Bathing/laundry + live-stock	
Prey Moul	0	0	0	0	0	0	0
Kap Kong	3	5	6	14	0	0	14
Kmut	0	18	11	29	1	0	30
Char	6	14	10	30	0	0	30
Prey Sampor	0	20	4	24	4	1	29
Bakou	0	0	0	0	0	0	0
Prey Kei	1	12	9	22	0	0	22
Total	10	69	40	119 (57%)	5	1	125 (60%)

Also in the dry season, nobody is walking more than 500 metres to draw water from a well. Just over 3% (or 4 of the households using well-water) has to cover 300-500 metres. About 70% (or 88 households) draw their water from a well within 100 metres distance.

All wells seem to be used for all purposes. However, one or more hygienic rules are generally applied with the objective to keep the water as clean as possible. Thus, most wells have a cover and bathing and laundry is are usually done at some metres distance from the well. In Prey Kei, most wells have a three sided screen at some 5-10 metres distance which is used for bathing and sometimes for laundry and dish-washing. Nonetheless, some problems were also observed. Wells were sometimes only half-covered. The platform around the well was not always kept clean and one platform was so slippery with algae that skill was needed to step on it. Surroundings of a well without a platform was naturally often muddy. No well was equipped with a special bucket and rope to draw water.

Pond water

Whereas a total of 78 households (or 37%) use pond water in the rainy season, only 18 households (or 9%) collect it for human consumption. This number becomes even less significant when we realize that only 7 households (or 3%) use pond water exclusively, thus not in addition to rainwater and/or well-water. Table 9 provides an overview of the use of pond water in the rainy season.

Table 9: Pond water use per village in the rainy season (N=208)

Village	Number of households							Total
	Human cons. only	Human cons. + bathing/laundry	Human cons. + bathing/laundry + live stock	Sub total human consumption	Bathing/laundry	Bathing/laundry + live stock	Live-stock	
Prey Moul	2	0	3	5	5	3	3	16
Kap Kong	0	3	3	6	3	4	5	18
Kmut	0	0	0	0	0	1	0	1
Char	0	0	1	1	6	4	4	15
Prey Sampor	0	2	0	2	3	1	7	13
Bakou	0	0	0	0	0	0	1	1
Prey Kei	0	2	2	4	0	1	9	14
Total	2	7	9	18 (9%)	17	14	29	78 (37%)

In the dry season, the picture changes considerably when many more households in Prey Moul, Kap Kong and Prey Kei have to rely on pond water for their daily needs. Table 10 illustrates this.

Table 10: Pond water use per village in the dry season (N=208)

Village	Number of households							Total
	Human cons. only	Human cons. + bathing/laundry	Human cons. + bathing/laundry + live stock	Sub total human consumption	Bathing/laundry	Bathing/laundry + live stock	Live-stock	
Prey Moul	0	2	28	30	0	0	0	30
Kap Kong	0	5	18	23	0	0	1	24
Kmut	0	0	0	0	0	0	2	2
Char	0	0	0	0	5	7	3	15
Prey Sampor	0	0	0	0	0	0	5	5
Bakou	0	0	0	0	0	0	0	0
Prey Kei	1	3	7	11	0	0	6	17
Total	1	10	53	64 (31%)	5	7	17	93 (45%)

In comparison with the distance to the wells, the distance to the ponds is generally much longer. In the rainy season, just over 30% of the households using pond water have to walk less than 100 metres. In the dry season this percentage falls back to 14%. The percentage of households which has to walk 250 metres or more is 42% in the rainy season and 51% in the dry season. However, the distance to a pond does not exceed 1000 metres anywhere, also not in the dry season.

Quantity and custom seem to be the most important reasons for the use of pond water. Quantity was mentioned by 40% of the households using pond water and custom by 68%.

Canal water

Canal water does not seem to be of any importance for human consumption. It is mainly used for cattle and to a lesser extent for bathing and laundry. In the rainy season, some 40% (or 83) of the households use water from a canal; in the dry season, this percentage drops back to 6% (or 12 households). Table 11 and 12 provide the details.

Table 11: Canal water use per village in the rainy season (N=208)

Village	Number of households					
	Human cons. only	Human cons. + bathing/laundry	Sub total human cons.	Bathing/laundry	Live-stock	Total
Prey Moul	0	0	0	4	14	18
Kap Kong	0	1	1	6	4	11
Kmut	1	0	1	3	14	18
Char	0	0	0	2	12	14
Prey Sampor	0	0	0	0	9	9
Bakou	0	0	0	0	4	4
Prey Kei	0	0	0	1	8	9
Total	1	1	2 (1%)	16	65	83 (40%)

Table 12: Canal water use per village in the dry season (N=208)

Village	Number of households							
	Human cons. only	Human cons. + bathing/laundry	Human cons. + bathing + live-stock	Sub total human cons.	Bathing/laundry	Bathing/laundry + live-stock	Live-stock	Total
Prey Moul	0	0	0	0	0	0	0	0
Kap Kong	0	0	0	0	0	0	0	0
Kmut	1	1	0	2	0	0	5	7
Char	0	0	0	0	0	0	2	2
Prey Sampor	0	0	0	0	0	0	2	2
Bakou	0	0	0	0	0	0	0	0
Prey Kei	0	0	0	0	0	0	1	1
Total	1	1	0	2 (1%)	0	0	10	12 (6%)

Quantity and custom are again the most frequently mentioned reasons for the selection of canal water. The few households which use canal water for human consumption do so because of its taste; one household because of custom.

In the dry season, the distance to a canal is within 500 metres for everybody. In the rainy season people may take their cattle to a canal which is as far as 2000 metres away, whereas 50% of the households using canal water will find it within 100 metres. It is not known why some people take their cattle so far during the rainy season, but we assume that it has to do with agricultural activities. One of the households using canal water for human consumption has to walk 500 metres, the others less.

River water

Only Prey Sampor and Bakou have a river within walking distance. Bakou is even situated at the bank of a river which makes the river an important source of water throughout the year. Table 13 shows the use of river water in the rainy season.

Table 13: Use of river water per village in the rainy season (N=208)*

Village	Number of households							Total
	Human cons. only	Human cons. + bathing/laundry	Human cons. + bathing/laundry + live-stock	Sub total human cons.	Bathing/laundry	Bathing/laundry + live-stock	Live-stock	
Prey Sampor	2	2	1	5	2	0	6	13
Bakou	0	6	6	12	6	5	4	27
Total	2	8	7	17 (8%)	8	5	10	40 (19%)

* As no river water is used in the other villages, these are not included in the table. However, percentage is taken from the total sample.

All households in Prey Sampor which draw river water for human consumption do so because of its taste. The people have to walk 800-1000 metres to collect the water. In Bakou, taste is never mentioned as a reason and households which use river water for human consumption do so because of the quantity and the closeness to the houses (less than 50 metres).

Quantity and custom are the most important reasons for the use of river water for bathing, laundry and livestock. The walking distance for people in Bakou does not exceed 200 metres. In Prey Sampor, the distance to the river is between 300 and 1000 metres.

In the dry season, more households rely on river water, as the following table shows.

Table 14: Use of river water per village in the dry season (N=208)

Village	Number of households						Total
	Human cons. only	Human cons. + bathing/laundry	Human cons. + bathing/laundry + live-stock	Sub total human cons.	Bathing/laundry + live-stock	Live-stock	
Prey Sampor	4	2	5	11	5	4	20
Bakou	0	8	21	29	0	0	29
Total	4	10	26	40 (19%)	5	4	49 (24%)

In the dry season, there is no alternative for Bakou than to take water from the river for all purposes. Thus, the main reasons mentioned are custom and quantity. Closeness to the houses and taste are secondary reasons. To draw water from the river, one household has to walk 500 metres, the other households, not more than 200 metres, of which 50% less than 50 metres.

In Prey Sampor, the choice is often made for well-water instead of river water (see above). One reason probably is the difference in distance. To draw water from the river, all households but one have to walk more than 250 metres. However, the eleven households which use river water for human consumption take the pains to walk 1000-1300 metres. They are doing so because they prefer the taste of river water. Other reasons for the use of river water are its clarity and quantity or custom.

Selection of water sources: a reasoned choice

The discussion above shows that whenever various water sources are available, choices are made which sources are used for what purposes. Where the choice is limited or non-existent, water from the same source is used for all purposes and availability, in this study expressed in terms of quantity and custom, is the sole criterion. Where several sources are within reach, other considerations also came to the fore.

Rainwater is highly valued and used to the extent rain fall and storage capacity permit. It is primarily reserved for human consumption and reasons as taste, closeness to the home, and hygiene are often mentioned next to custom. The reason put forward most frequently differs per village and seems to be affected by the characteristics of the other water sources available.

Well-water is valued because of its availability. Taste, clarity and hygiene generally score low. Where well-water competes with surface water, the former is often selected for reasons of proximity. However, a number of households takes the trouble of a long walking distance to a river or canal, because they prefer the taste of surface water. A summary overview of water source selection for human consumption is presented in annex 6.

Unlike rainwater, well-water and surface water are frequently used for bathing and laundry. For cattle, surface water is the more common source, followed by well-water.

Implications for the project

The introduction of a new water supply as envisaged by the project will change the array of choices with respect to water source selection. From the available data it may be expected that the new supply will have to compete with other sources, especially rainwater, and water preferred for reasons of proximity and/or taste. Thus, source selection will have to be an important issue of the hygiene education programme. Especially the taste may be an important aspect to address, as well-water is not much valued for this reason.

With respect to the use of rainwater for human consumption the project should decide on a general policy in close cooperation with the population. Either it may be decided to discourage rainwater consumption once the handpump has been installed, or it may be preferred to also direct the hygiene education programme to a safe collection of rainwater. A complicating factor for the latter is the large number of thatched roofs which makes a safe selection of rainwater doubtful. Some water quality tests may be indicated to allow for a more reasoned decision.

Informal information from villages already served with a new supply revealed some additional points of attention for the hygiene education programme. First of all, a number of wells seem to contain a lot of iron and thus a discussion should be included on the effects of iron on health and clothes and how to reduce the iron content in water before consumption. Also water pumping should be addressed as this is sometimes felt to be more burdensome as compared with drawing water with a bucket.

Main issues

- 1) utilization of water pumps & drilled wells from
- 2) design
- 3) O&M
- 4) Water collection & storage

DENMARK: 2

GERMANY: 0

!!

5. WATER COLLECTION, STORAGE AND USE

Water collection

Water collection is not a specific task of any of the household members. Instead, the person with time to spend or the person who needs the water goes to collect it. This situation is underlined by the data in the following table.

Table 15: Main water collectors of the household (N=208)

Household member	No. of households	%
Mother	89	32%
Father	70	25%
Daughter	70	25%
Son	49	18%
Total	278	100%

Taking into account the man-woman ratio, men's contribution to water collection becomes even more positive. Why sons collect water comparatively less often is not known.

Water is collected by the household members themselves. Although we came across water selling in other villages, it does not seem to occur in the sample villages.

People have to walk to fetch water. Usually the water is carried in two buckets with the help of a yoke. From informal discussions it became clear that one pair of buckets and yoke is sometimes shared by several households. Occasionally the water is carried in pots, either on the head or on the hip. About 10% (or 14 households) use at times a cart carrying a drum. Two thirds of these carts are drawn by an ox and one third by a man or woman.

Although we did not include a question on the cleaning of buckets and pots before water collection, our limited observations indicate that they are often rinsed, sometimes scrubbed, either at home or at the source before fresh water is fetched. However, we never happened to see that buckets or pots were covered during transportation.

Water storage

Water storage capacity at home differs per village and per family. The following table presents an overview.

Table 16: Number of jars per household per village (N=208)

Village	No. of jars per household				total no. of jars	average no. of jars per household
	0	1	2	3-7		
Prey Moul	1	5	13	11	78	2.6
Kap Kong	0	11	12	7	64	2.1
Kmut	11	12	5	2	30	1.0
Char	6	19	5	0	29	1.0
Prey Sampor	12	12	4	1	23	0.8
Bakou	6	19	4	0	27	0.9
Prey Kei	8	14	6	2	34	1.1
Total	44(21%)	92(44%)	49(24%)	23(11%)	285(100%)	1.4

Thus, Prey Moul and Kap Kong are relatively well-off, as far as jars are concerned. A considerable number of households have two jars or more and only one household in Prey Moul has to do without any. Worst off is Prey Sampor, both with respect to the number of households not having a single jar, and to the average number of jars per household. Kmut also has a considerable number of households without a jar, or only having one.

About 27% (or 57 households) have one or two small jars containing 30-50 litres, either in addition to, or instead of a normal size jar. Combining the data on smaller and bigger jars, we find 7 households (or 3%) without a single jar. These households are found in various villages.

Some 60% of the households clean their jars with water only, the others with water and a brush or some straw. Jars are cleaned varying from once a day to once a month; the majority of households (131 or 66%) clean their jars once or twice a week. However, these figures should be considered with some precaution. From additional information, we got the idea that jars are generally cleaned before a rainfall and thus the frequency may depend on the weather. Also, full jars are left until they are (nearly) empty before they are cleaned. And what is more, it proved to be a general practice to add fresh water to the water already in the jar, without cleaning in between (All except 6 households indicated to do so).

A large number of jars does not seem to be covered: 157 (or 55%). However, all households except one prove to have at least one jar covered. From observations we may assume that the jar which is covered, often contains water for drinking and kitchen use. However, observations also made clear that these jars are often only partially covered.

In most cases the interviewers judged the clarity of the water in the jars as insufficient. Sometimes worms were observed. The problem of water clarity may be quite understandable when we remember the sources of the water.

In addition to, or instead of jars, 47 pots are used by 38 households (or 18%). Only 16 (or 34%) of these pots are covered. The pots are kept in the house or the kitchen, either on the ground or on a table.

Water for drinking

About 41% (or 85) of the households in the sample do have a special container in which water is kept for drinking. Sometimes this is a kettle, usually with boiled water. Sometimes it is a pot or little jar in the house or near the kitchen. In the latter case the water is also used for food preparation.

Thus, quite a number of households take care to keep the water they drink as clean as possible. However, except for the boiled water, the water in the special containers cannot be expected to be safe, as the source from which it is taken and the way it is transported cannot be trusted.

The other households (123 or 59%) take water for drinking from a jar or pot, also used for other purposes. As we already stated before, the water for drinking is usually taken from the covered one. To take the water, a cup is used without a handle. This cup either floats on the water in the jar or is placed upside-down on the cover. While taking water, hands easily touch the water. Contamination of water through hands is thus very likely, both directly and indirectly via the cup.

Hand washing

A majority of the respondents told us to wash hands before eating, with 20% (or 41) not doing so. Hand washing before food preparation scores just over 30%, whereas hand washing after defecation or after cleaning the baby's bottom is often not done. The following table presents the details.

Table 17: Hand washing practices (N=208)

Occasion	No. of respondents	%
Before eating	167	80%
Before food preparation	64	31%
After defecation	39	19%
After cleaning baby's bottom	47	23%
When collecting water	30	14%
After work	30	14%
When hands are dirty	9	4%

From the above data, we may conclude that hand washing is a matter of concern and surely should be an important aspect of any hygiene education programme.

About 62% of the respondents wash their hands without soap. The other respondents either wash their hands always with soap, or occasionally. The situation seems to be somewhat the same in all seven villages. According to the village chief questionnaire, a number of households in Kap Kong, Knut, Prey Sampor and Prey Kei cannot always afford to buy soap. Thus, the affordability and use of soap seems to be a subject for further discussion.

Table 18: Use of soap for hand washing (N=208)

Hand washing	No. of respondents	%
Without soap	129	62%
Sometimes with soap	39	19%
Always with soap	40	19%
Total	208	100%

Bathing and laundry

It proves to be general practice to bath near the water source. Only 13 respondents and their families regularly bath at home. These families are found in Prey Sampor (3), Kap Kong (3) and Prey Kei (7). The seven families in Prey Kei bath themselves within the protection of a three sided screen near their private well. All other families (men and women) bath at a public water source. In case they use well-water or pond water they generally take care to keep the water as clean as possible by bathing at some metres distance from the source.

There does not seem to be any difference between bathing habits of men and women. All prefer to bath several times per day and do so if they can. Only 24% of the adults and 14% of the children indicated to bath just once a day. All babies except one are washed several times per day, usually at home. To get a better idea of the water requirements in the future, we asked in which season people bath themselves more often. Nearly 74% (or 153 respondents) indicated to bath more often in the dry season, whereas 23% (or 48) answered more in the rainy season. For 3% (or 7 respondents) the season does not influence their bathing habits. Relating these answers to the villages where the respondents live, we find a remarkably high number of respondents (16) in Prey Moul who indicate to bath more often in the rainy season. This most likely has to do with scarcity of water in the dry season.

Just like bathing, laundry is usually done near the water source (97% of the households are doing so), and exactly 50% of the respondents indicated to take care to wash the clothes at some metres distance from the source. The households which wash clothes exclusively at home, all live in Prey Kei with a well nearby.

Clothes are more commonly washed with soap than hands. The following overview presents the data.

Table 19: Use of soap for clothes washing (N=208)

Clothes washing	No. of households	%
Without soap	31	15%
Sometimes with soap	45	22%
Always with soap	132	63%
Total	208	100%

Implications for the project

One of the aims of the project is to provide villages with a safe water supply. However, as many studies indicate, a safe water supply alone is not enough, as water may get contaminated easily between its collection and use. Therefore, the hygiene education programme should include the subject of safe water collection and use in order to maximize the benefits of the improved supplies.

The data presented in this chapter show that some of the existing water collection and water use practices already help to prevent water contamination. Examples are cleaning of containers before water collection, covering of containers, using a special container for drinking water. However, these measures are not always applied and not by everybody. Also, some measures are not always applied in the most beneficial way. Thus, containers are sometimes only rinsed, not really cleaned; containers are often only partly covered.

Some other preventive measures do not seem to be practised as yet. For example, water does not seem to be covered during transportation. Also, no cups were observed with long handles to prevent hands touching water while taking it. Another point in this respect is the general practice to add fresh water to water already in the container instead of first cleaning it for safety sake.

To decide on the most effective preventive measures, some further investigations may be needed. On the one hand some water quality tests may help to indicate the important risks of water contamination which need to be addressed. On the other hand some preventive measures may be tried out to discover those which will be both acceptable and affordable. Although these activities will be to a certain extent research oriented, they should be participatory in approach as no improved practices may be expected without the full involvement of the people concerned.

A complicating factor in deciding on suitable measures may be the lack of water containers for a number of households. Although their number will be small, the problem may be pressing, especially when water has to be stored for 24 hours to reduce the iron content. Therefore, hygiene education activities and messages should take into account the different circumstances in the various households.

In villages with an improved water supply we came across water sellers. These water sellers may be a special target group in the hygiene education programme as the way they collect and sell water may greatly influence its safety.

Hand washing will be an important hygiene education issue, especially hand washing after defecation and before food preparation. As soap is not always affordable, suitable substitutes should be part of the discussion. From informal discussions it became clear that women sometime use their foot to clean babies bottom. Thus feet washing might also be addressed where it applies.

Bathing seems to be a much appreciated activity. It may be expected that the new supply also will serve this purpose, especially in the dry season when the need for frequent bathing is generally more felt. As one pump has to serve up to 400 people, this may create problems of accessibility such as long waiting times and thus people restoring to old sources to collect water for human consumption. Therefore, rules for bathing and laundry might be an important point for discussion in the hygiene education programme.

To help prevent contamination of water at the pump site, a special slab for bathing and laundry may be required at a few meters distance from the pump. This will be the more important in case the new supply is an improved shallow well. Additional hygiene education may help to further reinforce the present custom to bath and wash away from the water source.

6. DEFECATION PRACTICES AND LATRINE USE

Defecation practices

In all seven villages most people defecate in the open, either at the border of their yard, in the field or at the river site. Only 30 respondents appear to regularly use a latrine. The following table presents the details.

Table 20: Defecation site

Site	No. of respondents	%
At the border of the yard	81	39%
In the field	94	46%
At the bank of the river	3	1%
Latrine	30	14%
Total	208	100%

Young children do not seem to use a latrine at all. Just like babies they defecate in the yard. Only the distance to the house changes with age: babies more often defecate quite near to the house whereas young children increasingly use the border of the yard.

Table 21: Defecation site of babies and young children (between 1 and 3 years old)

Site	Babies	%	Young children	%
Close to the house	41	67%	45	51%
At the border of the yard	20	33%	44	49%
Total	61	100%	89	100%

Most respondents indicated that the faeces of adults, babies and young children are covered (see Table 22). Faeces of babies and young children even seem to be more generally covered than those of adults. Covering is done in the following way: with the help of a hoe a little hole is dug in which the faeces are disposed and subsequently covered.

Table 22: Covering of faeces according to age group (As percentage of the total number of persons in a particular group)

Age group	Faeces covered (%)
Babies	84%
Young children	93%
Adults (respondents)	69%
Total	78%

To what extent faeces are covered as a daily routine is not known. In any case the responses indicate that there is a norm to cover faeces. There seems to be no custom to throw babies' and children's faeces into the latrine, as nobody reported to do so.

Cleaning material used after defecation differs for children and adults. Whereas babies and young children are cleaned with water, adults mostly use leaves. One adult reported to occasionally use paper, another grass. This material is said to be covered together with the faeces.

Table 23: Material used for cleaning after defecation according to age group (As percentage of the total number of persons in a particular group)

Age group	Material used (%)	
	Water	Leaves
Babies	95%	5%
Young children	98%	2%
Adults	24%	76%
Total	54%	46%

Cleaning of young children after defecation is normally done by one of the parents, sometimes by a brother or sister and occasionally by the child itself. Table 24 presents an overview.

Table 24: Person who cleans the bottom of the young child (N=87)

Acting person	No. of families	%
Parent	73	84%
Parent and brother/sister	10	12%
Brother/sister	3	3%
Parent and child him/herself	1	1%

Latrine use

From all respondents in the sample, nearly 50% never used a latrine in their lives. This figure seems to apply to both women and men. The respondents who used a latrine one time or more, are not evenly distributed over the villages, as the following table will show.

Table 25: Respondents with experience in latrine use per village
(N=208)

Village	No. of respondents	%
Prey Moul	14	50%
Kap Kong	13	43%
Kmut	10	33%
Char	18	60%
Prey Sampor	22	76%
Bakou	7	24%
Prey Kei	21	70%
Total	105	50%

The difference in the number of respondents with experience in latrine use is greatest between Bakou (24%) and Prey Sampor (76%). Reasons for the great variation in percentages seem to be manifold, but should be further investigated before more final statements can be made. One of the reasons Prey Sampor is scoring so high probably is due to the fact that this village used to be a model village.

When we asked the respondents whether they thought a latrine would be useful, we received the following answers:

Table 26: Opinion on utility of latrines

Opinion	No. of respondents	%
Latrine is useful	159	77%
Latrine is not useful	43	21%
Do not know	5	2%
No answer	1	-
Total	208	100%

Combining the data of Table 25 and 26 shows that also a majority (or 58%) of the respondents who never used a latrine, consider a latrine to be useful. Not surprisingly, the lowest interest in latrines is found in Bakou.

The 159 respondents (or 77%) who affirmed the utility of latrines voiced various reasons for their opinion. The possibility to use human faeces as manure was the reason most frequently mentioned. The use of human faeces as manure is known from the seventies. However, it is not yet sufficiently clear whether it is actually being used or will be used as manure. Hygienic reasons also were often put forward, such as: "prevention of diseases"; "protection against flies"; or just "hygiene". Seven times a latrine was considered to be useful to prevent a "bad smell". Three respondents mentioned "privacy" as most important reason. Below the reasons are summarized.

Table 27: Reasons why a latrine is considered to be useful (N=159)

Reason	No. of respondents	%
Use of human faeces as manure	79	50%
Protection of health	70	44%
Prevention of bad smell	7	4%
Privacy	3	2%
Total	159	100%

Of the 159 respondents who agreed on the utility of latrines, 131 (or 63% of the total sample population) did have the intention of constructing a latrine. However, because of a number of problems they did not have it done yet. One of these reasons proves to be very outstanding: lack of material. The poor structure of the ground is a second important problem. A third problem is lack of time and/or help to dig the hole.

Table 28: Problems hampering the construction of latrines (N=130)

Problem	No. of households	%
Construction technique is unknown	4	3%
Poor structure of the ground	46	35%
Lack of material	116	89%
Lack of persons to aid hole digging	23	18%
Lack of time	13	10%
Do not know	3	2%

Characteristics of household latrines

Of the 30 respondents who regularly use a latrine, 19 (or 9% of the total sample population) have a latrine of their own. All these latrines have been visited by the interviewers and below their observations are summarized.

Two of the 19 latrines are pour-flush latrines. However, one of the pans has been destroyed but is nonetheless used. The other 17 latrines are pit latrines. Five of them consist of an undeep hole with two pieces of wood to place the feet on; the other twelve have a slab, often of wood. In a number of cases there are cracks and holes between the pit and the slab. Six latrines have a hole cover however not always put in the right position (see picture).

There is one latrine having a hand washing facility: a bucket and soap just outside the latrine. Water is taken from a pond close to the latrine.

Four of the latrines are used by more than one household: two latrines by six households; one latrine by four to five households; and one latrine by two households. The reasons and rules for sharing latrines are not sufficiently known. One respondent indicated that other households also used their latrine because they could not construct one themselves due to a high groundwater table.

The problem of a high groundwater table and also the risk of collapse seem to be rather general. As a result, most pits are very shallow. Even though, some latrines can only be used in the dry season as they are flooded in the rainy season. One of the households solved this problem by digging in an old cracked jar. Other households constructed elevated latrines as an alternative solution.

The superstructures of the latrines are nearly always made of local and/or waste material, such as palm tree leaves, car doors, wood, corrugated iron, sheet iron. Often parts are lacking such as a roof, a wall and/or a door (or a fixed half-door) (see picture).

In view of the above description, it is not amazing that the cleanliness of the latrines is not easily maintained. The observations of the interviewers are summarized below.

Table 29: Cleanliness of the latrines

Part of the latrine	Clean	Unclean	Not applicable (* = no answer)	Total no. of latrines
Slab and ground	5	9	5	19
Inner walls	6	9	4	19
Surroundings	10	7	2*	19

It is remarkable that four out of the five latrines which are constructed with iron plates are evaluated as being clean. It might be that these latrines are easier to clean but it is also possible that compared to the other latrines they give a cleaner impression. For a latrine programme both aspects could be of importance.

All latrines except one are situated at a distance of more than 10 metres both from houses and wells.

On our question what the latrine owners considered to be the main advantages of using a latrine, the following answers were received.

Table 30: Advantages of using a latrine (N=19)

Advantage	No. of respondents	%
Privacy*	10	53%
Protection against the rain	8	42%
Hygiene	14	74%
Production of manure	2	11%
Prevention of bad smells	1	5%
Close to the house	1	5%

* In Kmer: having walls around you.

Hygiene is the advantage most frequently mentioned. This could justify the assumption that the latrine owners relate latrine use to health protection. However, when we compare this finding with the data on latrine cleanliness we must conclude that this relation is at least questionable. Only 4 out of the 14 latrine owners who mentioned hygienic reasons had a clean slab and/or soil. Thus, this might indicate a difference between health knowledge and health practice.

Privacy is another advantage frequently mentioned. From informal discussions in the villages we gathered privacy to be a more important consideration for women than men. However, the limited quantitative data available do not support this impression. Four of the five male respondents mentioned privacy as an important advantage for themselves. Thus tentatively it may be that privacy is valued by both women and men.

Our doubt expressed before on the use of human faeces as manure is strengthened by the data above. Only 2 latrine owners reported the production of manure to be an advantage.

Implications for the project

Although many respondents indicated an interest in latrines, we cannot expect a latrine programme to be quick and easy. At present most people defecate in the open and a considerable number of people never used a latrine before. Therefore, it is not likely that they will change their practices without good reasons.

Advantages of latrines use as put forward by present users will require further exploration to get a deeper understanding of what might motivate people to change their defecation habits. In this baseline study a majority of users mentioned hygiene as an advantage. However, there is much evidence from all over the world that hygiene alone is not a sufficient reason. Privacy was another advantage frequently mentioned and this might be an important additional motivating factor, especially in densely populated villages without proper places to hide oneself.

As may be clear from the above it is foreseen that the latrine programme primarily will be a village motivation programme. The programme should start in an early phase and continue long after latrine construction has been completed. Special care should be taken that all households in the village participate in the programme as to maximize health benefits. This might imply that some households are offered help by fellow villagers to dig the hole and to arrange for material to construct the superstructure. If acceptable, sharing of latrines might also be considered.

As the number of people having experience in latrine use differs considerable per village, the programme should be flexible by nature. Thus, in villages like Bakou motivation may take longer and also more information may need to be given about the ins and outs of latrines. A latrines model may aid to this end. All village programmes should include discussions about a proper and exclusive use of the latrine (and what to do at night, or when you have diarrhoea or when you are far away from home); latrine use by children; where to throw babies faeces; use of water, leaves and/or paper as cleansing material; suitable hand washing facilities; use of hole covers with a long handle; latrine cleaning; purpose of the vent pipe.

In villages where no latrine programme will be carried out, hygiene education activities primarily should focus on reinforcing the practice of covering faeces and of hand washing. Slowly, more emphasis may be put on constructing latrines with local material and community effort only. However, care should be taken that latrines will be up to standard as to avoid that they will become a new health risk instead of a protection of health.

7. HEALTH

Health and health knowledge

In the two weeks preceding the baseline, 228 household members (145 children and 83 adults) were reported to be ill. Together this is 23% of the total number of persons included in the survey.

Table 31: Number of persons ill per household (N=208)

No. of children ill in the household	No. of households	%	No. of adults ill in the household	No. of households	%
0	104	50%	0	139	67%
1	75	36%	1	57	27%
2	21	10%	2	10	5%
3	5	2%	3	2	1%
4	2	1%	4	-	
5	1	1%	5	-	
Total	208	100%	Total	208	100%

Together these 228 people suffered from 242 diseases. The diseases mentioned are summarized in the following table.

Table 32: Type of disease and number of persons affected (N=228)

Disease	No. of persons affected	%
Diarrhoea/Dysentery	60	26%
Worm diseases	16	7%
Eye diseases	8	4%
Skin diseases	22	10%
Malaria *	6	3%
Unspecified fever	95	42%
Other diseases **	35	17%

Total number of persons affected: 228
average number of diseases per person: 1.06

* Malaria is not found in the area itself. All cases are imported.

** Such as Polio, Tuberculosis, Hepatitis, Flu, etc.

Thus, most people who were ill during the two weeks preceding the baseline suffered from unspecified fever (42% or 95 persons). To what extent this fever is caused by a water and sanitation-related disease is not known. Diarrhoea is the second important disease with 60 persons (or 26%) affected. Of the total sample population this is 6%. More babies were suffering from diarrhoea than (seven cases were reported which amounts to 11% of the total number of babies).

To get a deeper understanding of perceived health problems, we asked the respondents what they considered to be the most important disease(s) in their village. The answers are presented in table 33.

Table 33: The most important disease(s) in the village as perceived by the respondents (N=208)

Disease	No. of respondents mentioning this disease	%
Diarrhoea/Dysentery	156	75%
Worm diseases	44	21%
Eye diseases	20	10%
Skin diseases	67	32%
Malaria	32	15%
Unspecified fever	44	21%
Measles	18	9%
Dengue	5	2%
Do not know	14	7%

The above table shows that 75% of the respondents perceive diarrhoea to be an important disease. Skin and worm diseases are also frequently mentioned. Unspecified fever, on the other hand, scores comparatively low.

When we asked during which season diarrhoea is a more serious problem, the following answers were received.

Table 34: The season in which diarrhoea is perceived to be a more serious problem

Season	No. of respondents	%
More cases of diarrhoea during the rainy season	56	27%
More cases of diarrhoea during the dry season	97	47%
No difference between the seasons	14	6%
Do not know	41	20%
Total	208	100%

Especially male respondents (67%) mentioned the dry season to be the worst season. A comparison by village shows that except for Prey Sampor and Bakou, the majority of respondents judge the problem of diarrhoea to be more serious during the dry season. The fact that the majority of respondents in Prey Sampor and Bakou consider diarrhoea a more serious problem in the rainy season might be related to the fact that they rely more heavily on surface (river) water.

Parents of children between 0-5 years of age were asked what they do when their child suffers from diarrhoea. Their answers show that diarrhoea is treated in a large number of ways, but most often through medicines, whether or not supplied by the health centre.

Table 35: Remedies used when children between 0-5 years of age have diarrhoea (N=120)

Remedy	No. of respondents	%
Medicines	95	79%
Visit to health centre	76	63%
Visit to local healer	9	8%
ORT	21	18%
Abstinence of food and drink	24	20%
Domestic remedy	43	36%
Sorcery	11	9%

With regard to the prevention of water and sanitation-related diseases some questions were included about disease transmission. A majority of 134 respondents (or 64%) felt that faeces may transmit diseases.

Table 36: Opinion about disease transmission through human faeces (N=208)

Opinion	No. of respondents	%
Human faeces may transmit disease	134	64%
Human faeces cannot transmit disease	48	23%
Do not know	26	13%

These 134 respondents mentioned the following diseases possibly transmitted by human faeces.

Table 37: Diseases transmitted through human faeces according to the opinion of the respondents (N=134)

Disease transmitted	No. of respondents	%	% of total sample population
Diarrhoea	105	78%	50%
Worm diseases	22	16%	11%
Skin diseases	9	7%	4%
Eye disease	4	3%	2%
Fever	12	9%	6%
Do not know	23	17%	11%

Remarkable is the knowledge about the danger of human faeces for the transmission of diarrhoea. However, how this transmission is effectuated is much less known. Only the role of flies seems to be common knowledge. Even people who do not know which diseases are transmitted through human faeces, pointed at the danger of flies. Additional informal talks made clear that the role of flies in disease transmission had been part of a hygiene education campaign several years ago. It is noteworthy that 17 respondents (or 13%) mention the risk of disease transmission through latrines (see table 38).

Table 38: Routes of disease transmission according to the opinion of the respondents (N=134)

Route	No. of respondents	%	% of total sample population
Water	25	19%	12%
Food	30	22%	14%
Personal hygiene	10	7%	5%
Latrines	17	13%	8%
Flies	119	89%	57%
Do no know	10	7%	5%

Health services from the health centres

Every Khum has its own health centre with one or more nurses, midwives and/or "healers" who received a professional education from several weeks to several years. Below an overview is given.

Table 39: Health centres and health personnel in the survey area

Village	Khum	No. of villages in Khum	Total pop. in Khum	No. of nurses	No. of mid-wives	No. of matrones*	Healers
Prey Moul	Kraign Thnong	8	1698	2	0	4	1
Kap Kong	Chom Chao	23	7318	1	1	1	9
Kmut	Bakou	7	2208	0	1	2	1
Char	Kôk Trâp	9	2748	1	2	2	1
Prey Sampor	Kraign Pong Ro	4	1254	1	1	0	1
Bakou	Dangkor	6	4616	2	0	3	1
Prey Kei	Phloeung Chhès Rotès	8	2524	0	2	8	1
Total		65	22366	7	7	20	15

* matrones are village midwives with a lot of experience and a short formal training

From the records in the health centres, data were obtained on the number of patients visiting the centres during the past three years. The following tables summarize the number of cases of important water and sanitation-related diseases treated in the centres.

Table 40: Number of cases of unspecified diarrhoea and dysentery treated in the health centres covering the seven villages (N=19618 for 1984; N=22366 for 1985 and 1986)

Village	Diarrhoe			Dysentery		
	1984	1985	1986*	1984	1985	1986*
Prey Moul	327	209	363	43	33	64
Kap Kong	598	611	1209	227	291	369
Kmut	96	80	139	372	302	33
Char	-	312	399	-	33	35
Prey Sampor	350	349	349	187	170	192
Bakou	475	237	359	327	96	275
Prey Kei	811	910	1156	25	22	83
Total	2657 (14%)	2708 (12%)	3974 (18%)	1181 (6%)	947 (4%)	1053 (5%)

Table 41: Number of cases of eye and skin diseases treated in the health centres covering the seven villages (N=19618 for 1984; N=22366 for 1985 and 1986)

Village	Eye diseases			Skin disease		
	1984	1985	1986*	1984	1985	1986*
Prey Moul	500	314	211	801	613	249
Kap Kong	275	194	242	289	448	262
Kmut	260	224	146	311	219	-
Char	-	56	127	-	123	217
Prey Sampor	450	363	174	650	581	208
Bakou	480	470	1058	847	526	978
Prey Kei	120	138	424	538	579	409
Total	2085 (11%)	1759 (8%)	2382 (11%)	3434 (18%)	3089 (14%)	2323 (10%)

* 1986 covers January to September

Table 42: Number of cases of worm diseases and dengue treated in the health centres covering the seven villages (N=19618 for 1984; N=22366 for 1985 and 1986)

Village	Worm diseases			Dengue		
	1984	1985	1986*	1984	1985	1986*
Prey Moul	439	219	168	0	0	0
Kap Kong	95	129	101	12	8	3
Kmut	156	125	157	21	15	7
Char	-	32	63	-	0	0
Prey Sampor	270	211	177	0	0	1
Bakou	80	96	151	12	3	29
Prey Kei	716	812	741	0	14	0
Total	1756 (9%)	1624 (7%)	1558 (7%)	45 (0.2%)	40 (0.1%)	40 (0.1%)

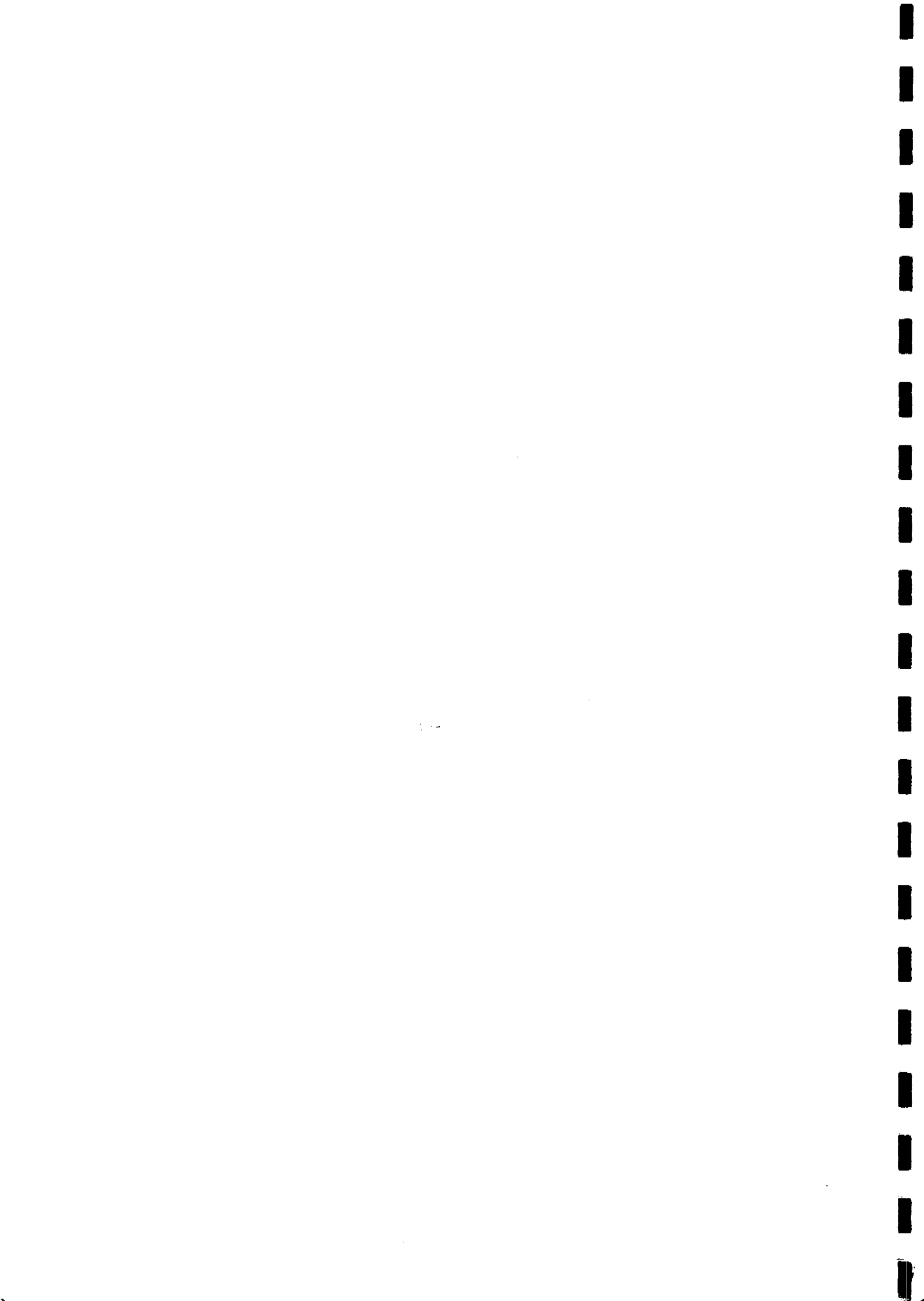
Implications for the project

Diarrhoea is generally perceived as being an important health problem in the villages. As such the prevention of diarrhoea might prove to be an important motivating force in the hygiene education programme. However, it should be realized that the relation between faeces and diarrhoea is sometimes unknown, sometimes partially known. This does not imply that we would suggest to focus the hygiene education programme on increasing people's knowledge of disease transmission. Instead it is suggested that in discussing possible preventive measures the possible benefits should be part of the discussion.

The available data from the health centres show that not only diarrhoeas are common diseases, but also eye, skin and worm diseases. Further investigation will be needed to get a deeper understanding to what extent more frequent bathing will help to prevent eye and skin diseases. (For the moment we assume that the problem cannot be solved by more frequent bathing as the respondents indicated to bath already very often).

The data from the health centres do not provide sufficient indication about seasonal differences in the incidence of diarrhoea. Therefore, the opinion of the respondents cannot be checked against the official records. With the information we have so far, it might be more effective to discuss the problem of diarrhoea in the dry season as most respondents indicated the problem being more serious during this season.

The number of patients visiting the health centres indicate that quite a number of people seek official medical help. This is confirmed by the answers of the parents when asked what they would do when their child suffers from diarrhoea. This may lead to the tentative conclusion of a positive attitude to the services provided by the health centres. When we add to this the number of cases of water and sanitation related diseases treated in the health centres and the overall availability of health personnel, the present health workers might become important preventive health motivators in the future hygiene education programme. However this would increase their work load, for which compensation would be required.



UNITED NATIONS CHILDREN'S FUND



FONDS DES NATIONS UNIES POUR L'ENFANCE

ENQUETE DE BASE

Questionnaire: Chef de Village

Numéro:.....

Date de la Visite:.....

Données générales du village

1. Nom de la province:.....
2. Nom du Khum:.....
3. Nom du Phum:.....
4. Nombre d'habitants:.....
Date du recensement:.....
Nombre d'hommes:..... Nombre des femmes:.....
5. Nombre de familles:.....
Date du recensement:.....
6. La distance à pied entre le centre du village et l'école:.....
7. La distance à pied entre le centre du village et l'infirmerie:.....

Situation actuelle en ce qui concerne l'alimentation en eau

8. D'où provient l'eau utilisée par les villageois?

En saison de pluie:

- 0 eau de pluie:.....
- 0 puits, nombre:.....
- 0 mare, nombre:.....
- 0 canal
- 0 rivière
- 0

En saison sèche:

- 0 eau de pluie
- 0 puits, nombre:.....
- 0 mare, nombre:.....
- 0 canal
- 0 rivière
- 0



9. Y-a-t-il des problèmes concernant l'alimentation en eau du village?

- quantité:.....(spécifiez)
- qualité:.....(spécifiez)
- distance à parcourir:.....(spécifiez)
-

10. Les différents points d'eau du village sont-ils utilisées à des usages différents? (Par exemple: pour l'eau de boisson/ de bain/de bétail)?

- non
- oui, raison:.....

11. Y-a-t-il des règlements, des limitations ou d'autres dispositions concernant l'usage des points d'eau et leur maintenance?

.....
.....

12. Est-ce que les villageois considèrent l'eau d'une provenance (par exemple: eau de pluie/mare/rivière/puits) plus saine que l'eau d'une autre provenance?

- non
- oui, l'eau deest considéré plus saine que l'eau de.....raison:.....
- je ne sais pas

Assainissement et situation sanitaire du village

13. Où les villageois jettent-ils les ordures domestiques?

- dans la cour près de la maison
- dans des fosses domestiques
- brûlées
- compostées
-

Y-a-t-il des problèmes (par exemple des rats)?

.....



18. Y-a-t-il (aussi) des latrines publiques ou des latrines collectives?

- à l'école
- à l'Infirmierie
- pour une groupe de familles

Peut-on s'y laver les mains?

- oui
- non
- je ne sais pas

19. Les utilisateurs de latrines publiques et de latrines familiales éprouvent-ils des problèmes?

- non
- oui, des problèmes de
 - propreté
 - odeurs désagréables
 - mouches
 - effondrements
 -
- je ne sais pas

20. Peut-on d'habitude acheter du savon à une distance raisonnable?

- non, raison:.....
- oui

A un prix abordable?

- non
- oui pour toutes les familles
- oui seulement pour quelques familles (spécifier).....
-

21. Quels sont les problèmes principaux concernant la santé au village?

.....



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14. Y-a-t-il dans le village des endroits où l'eau reste stagnante?

- non
- oui, même en saison sèche? non
- oui

A-t-on essayé de drainer cette eau stagnante:.....

15. Y-a-t-il dans le village des cours des maisons qui sont parfois inondés?

- non
- oui, raison: par la pluie
- par la fleuve

16. Où les villageois vont-ils déféquer le plus souvent?

- en bordure de la cour
- dans la riziére
- aux champs
- dans les latrines
-

17. Combien le village compte-t-il de latrines familiales?

- estimation actuelle
- recensement effectué le:.....

De quel type sont les latrines?

- fosses ordinaires
-



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22. Dans votre village, est-ce qu'il y a:
- un activiste sanitaire? non
 oui
 - une matrone (accoucheuse traditionnelle)? non
 oui
 - un membre de l'Association des Femmes? non
 oui

Moyens de subsistance du village

23. Quelles activités agricoles ont lieu au village tout au long de l'année?

- culture du riz une fois par an
- culture du riz deux fois par an
-

24. Est-ce que les villageois cultivent des fruits et des légumes en saison des pluies?

- non, raison:.....
- oui. Dans quel but?:.....

Et en saison sèche?

- non, raison:.....
- oui. Dans quel but?:.....

25. Y a-t-il d'autres activités économiques au village?

- artisanat:.....
- réparateur:.....
- petite entreprise:.....
-



26. Avez-vous des remarques spéciales?

.....
.....

Merci beaucoup de prendre le temps de répondre à toutes ces questions.

Remarques de l'enqueteur/enquetrice:.....
.....
.....

UNITED NATIONS CHILDREN'S FUND



FONDS DES NATIONS UNIES POUR L'ENFANCE

ENQUETE DE BASE

Questionnaire : Familles

Numéro:.....

Date de la visite:.....

Nom de la province :.....

Nom du Srok:.....

Nom du Khum:.....

Nom du Phum:.....

Nom de la famille:.....

Données de la famille:

1. Combien y-a-t-il de personnes dans votre famille (ménage)?

Membres de la famille#	Sexe	Age##	Ecole##
1.
2.
3.
4.
5.
6.
7.
8.

Note: # Entourer la personne enquêtée

Seulement pour les enfants

Maladies

2. Est-ce que dans votre famille, une ou plusieurs personnes ont été malades durant les deux dernières semaines?

Personne malade

Maladie

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



3. Quelles sont les maladies les plus fréquentes dans votre village?

- diarrhée
- dysenterie
- vers/parasytes
- rougeole
- maladie des yeux
- maladie de peau
- dengue
- fièvre-hémorragique
-

4. A quelle saison est-ce que les diarrhées se manifestent le plus souvent?

- saison des pluies:.....(spécifiez)
- saison sèche:.....(spécifiez)
- autrement:.....

5. Que faites-vous quand votre enfant a la diarrhée ?

- remède de bonne femme
- médicaments:.....(spécifiez)
- abstention de liquide et d'aliments
- sels de réhydratation (ORS)
- aller à l'Infirmierie
- aller au guérisseur local
-



Choix des points d'eau

6. Ou allez-vous chercher l'eau de boisson en saison des pluies?
 Pour quelles raisons? A quelle distance de votre maison?

(Posez les memes questions au sujet des autres utilisations de l'eau. Notez les réponses sur le tableau ci-dessous)

Choix des points d'eau en saison des pluies	type d'usage						raison					distance à pied	
	boisson	cuisine	lessive	bain	boeufs/abreuvement	boeufs/bain	distance	goût	couleur	hygiene	quantité	habitude	à la maison
eau de pluie													
puits ordinaire													
mare													
canal													
rivière													
.....													

Ajouts:

.....

.....



9. (Posez les memes questions pour la saison sèche)

Choix des points d'eau en saison <u>sèche</u>	type d'usage						raison					distance à pied	
	boisson	cuisine	lessive	bain	boeufs/abreuvement	boeufs/bain	distance	goût	couleur	hygiene	quantité	habitude	à la maison
eau de pluie													
puits ordinaire													
mare													
canal													
rivière													
.....													

Ajouts:.....

Puisage et stockage de l'eau

8. Qui va chercher l'eau dans votre famille le plus souvent?

- la mère
- le père
- la fille
- le garçon
-

9. Quel récipient utilisez-vous pour transporter l'eau?

- deux seaux avec un joug
- pot
-



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10. Comment transportez vous l'eau?

- 0 à pied
- 0 à bicyclette
- 0 en charrette

11. Comment gardez-vous l'eau à la maison?

- 0 jarre nombre:..... (observez)
 type de couvercle:..... (observez)
- 0 pot nombre:..... (observez)
 emplacement:..... (observez)
 type de couvercle:..... (observez)

Est-ce qu'il y a un récipient particulier pour l'eau à boire?

- 0 non
- 0 oui

12. (Demandez à la personne enquêtée de vous montrer comment et avec quel ustensile elle prends l'eau à boire? Observez ou se trouve l'ustensile et si ses doigts touchent l'eau).

- 0 l'ustensile se trouve dans l'eau de la jarre
- 0 l'ustensile se trouve
- 0 oui; les doigts touchent l'eau
- 0 non, les doigts ne touchent pas l'eau

14. (Pour les familles qui ont une jarre)

Nettoyez-vous la jarre dans laquelle vous gardez l'eau?

- 0 non
- 0 oui, comment?:.....
 combien de fois?:..... par semaine
 :..... par mois

Propreté corporelle

15. Quand vous lavez-vous les mains?

- 0 avant les repas
- 0 avant de préparer de la nourriture
- 0 après défécation
- 0 après avoir nettoyé les fesses du bébé
- 0 en allant chercher de l'eau



Avec quoi vous lavez-vous les mains?

- 0 seulement avec de l'eau
- 0 avec de l'eau et du savon
- 0 autre: avec.....

Où vous lavez-vous les mains et que faites-vous de l'eau après?

.....

16. Vous m'avez dit que vous utilisez l'eau de pour vous baigner. Est-ce que vous vous baignez à cet endroit là, ou transportez-vous l'eau à la maison?

- 0 à cet endroit là 0 dans/au bord du point d'eau
- 0 à quelques mètres de distance
- 0 à la maison:.....(spécifiez)

17. Et les autres membres de votre famille?
.....

18. (Quand il y a un bébé)
Où baignez-vous le bébé?

- 0 à la maison
- 0 au point d'eau

19. Combien de fois on se baigne-t-on dans votre famille?

Plusieurs	Une fois fois par
<u>fois par jour</u>	<u>par jour</u>	<u>semaine</u>

- les femmes:.....
- les hommes:.....
- les enfants:.....
- le bébé:.....

20. Est-ce qu'on se baigne plus ou moins en saison des pluies qu'en saison sèche?

- 0 plus en saison des pluies
- 0 plus en saison sèche



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Lessive

21. Vous m'avez dit que vous utilisez l'eau de pour faire la lessive. Est-ce que vous faites la lessive à cet endroit là, ou transportez-vous l'eau à la maison?

- à cet endroit là dans/au bord du point d'eau
 à quelques mètres de distance
- à la maison..... (spécifiez)

22. Avec quoi faites-vous la lessive?

- seulement avec de l'eau
 avec de l'eau et du savon
 autre: avec.....

23. Où jetez-vous l'eau sale après la lessive?

.....

Evacuation des selles

24. Où allez-vous déféquer le plus souvent?

- en bordure de la cour
 dans la rivière
 aux champs
 dans des latrines (continuez avec la question 24)

Couvrez-vous le selles?

- non
 oui

25. Où déféquent les bébés?

- à la maison/près de la maison
 en bordure de la cour



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Que faites-on des selles?

.....

Nettoyez-vous les fesses du bébé après qu'il ait déféqué?

- non
- oui, avec: de l'eau
- avec des feuilles
- avec de l'herbe
- Que faites-vous de cela:.....

26. Où déféquent les jeunes enfants (1 à 3 ans)?

- à la maison/près de la maison
- en bordure de la cour
-

Que fait-on des selles?

.....

Qui nettoie les fesses des jeunes enfants?

- la mère/le père
- le frère/la soeur
- lui-même
-

Avec quoi?

- de l'eau
- des feuilles
- de l'herbe
-

Que faites-vous de cela?

.....



27. Quels moyens utilisent les autres membres dans votre famille pour se nettoyer après avoir déféqué?

- 0 de l'eau
- 0 des feuilles
- 0 de l'herbe
- 0

28. Que font-ils de cela?

.....

(Si la famille dispose d'une latrine, continuez avec la fiche d'observation sur les latrines et après avec la question 33)

29. Avez-vous déjà utilisé une latrine?

- 0 non
- 0 oui

30. Pensez-vous une latrine est utile?

- 0 non
- 0 oui, pourquoi?:.....

31. Avez-vous eu l'intention de construire une latrine vous-meme?

- 0 non (continuer avec question 33)
- 0 oui

32. Quels sont les problèmes pour construire une latrine?

- 0 la technique de construction est inconnue
- 0 la structure du sol est mauvaise
- 0 il manque les matériaux
- 0 il manque les personnes pour creuser une fosse
- 0



Connaissance des maladies

33. Pensez-vous que les selles peuvent entraîner des maladies?

- non (continuez avec la question 36)
- oui
- je ne sais pas (continuez avec la question 36)

34. Quelles maladies?

- diarrhée, dysenterie, choléra
- vers
- maladies de peau
- maladies des yeux
-

35. Comment les selles peuvent-ils transmettre des maladies?

- l'eau sale
- le manque d'hygiène alimentaire
- le manque d'hygiène corporelle
- le manque de latrines
- les mouches
-

Propreté des environs

36. Comment vous débarrassez-vous des ordures?

- brûlées
 - enterrées
 - déversées dans une fosse sur le terrain
 -
- (Observez aussi).

37. Avez-vous des cochons?

- non
 - oui. Où les mettez vous?.....
- Que faites vous avec les excréments? du compost
-



38. Avez-vous des boeufs?

- non
- oui. u les mettez vous:.....
- ue faites vous avec les excréments du compost
-

39. Avez-vous des poules?

40. Avez-vous des remarques spéciales?

.....

.....

.....

Merci beaucoup de prendre le temps de répondre à toutes ces questions.

Observations

41. Observations sur la maison:

- maison en paille
- maison en bois (élevée)
- maison piloté
- maison à terre
- toit en paille
- toit en tuile
- toit en tôle
-

42. Observations sur le potager

- palmiers
- bananiers
- autres fruits:.....
- légumes:.....

43. Remarques de l'enqueteur/enquetrice

.....

.....

.....

Enquête de base

Numero:

Fishe d'observation et questionnaire: latrines

Date de la visite

(Si la famille dispose d'une latrine utilisée, visitez-la et notez ci-dessous vos observations.)

1. Nom de la famille:
2. Type de latrine:
 - Fosse ordinaire
 - (Décrivez le type et la propreté. Ensuite, continuez avec la question: 8)
3. Y a-t-il une dalle couvrant la fosse?
 - non
 - oui. Dans quel état est-elle?
4. Y a-t-il un couvercle?
 - non
 - oui
5. Dans quel état sont les murs, le toit et la porte?
6. Propreté de la dalle et du sol?
 - propres
 - malpropres(specifiez)
7. Propreté de la porte et des parois intérieures?
 - propres
 - malpropres(specifiez)
8. Y a-t-il de quoi se lave les mains?
 - non
 - oui. De quelle manière?
9. Y a-t-il du savon ou autre produit de substitution?
 - non
 - oui

10. Propreté des environs:

propre

malpropre(specifiez)

11. La position de la latrine:

..... mètres loin de la maison

..... mètres loin du puits (si applicable)

12. Autres remarques

.....

(Posez les questions suivantes à la personne enquêtée:)

13. Quels avantages éprouvez-vous en utilisant la latrine?

intimité

à l'abri de la pluie

raisons d'hygiène

.....

14. Quels problèmes éprouvez-vous en utilisant la latrine?

odeur

petite et noire

difficultés de nettoyage

les petites enfants ont peur d'utiliser la latrine

difficultés d'entretien

.....

Enquête de base

Numero:

Fishe d'information: Infirmierie

Date de la visite

1. Nom de la province:
2. Nom du Srok:
3. Nom du Khum:
4. Nombre des villages dans le Khum:
5. Nombre des habitants dans le Khum:
6. Nombre des cas de principales maladies d'après les statistiques de l'infirmierie:

	1984	1985	1986										
	J - D	J - D	J	F	M	A	M	J	J	A	S	O	
diarrhée													
dysenterie													
vers/parasites													
rougeole													
maladie des yeux													
maladie de peau													
malaria													
fièvre-hémorragique													
.....													

7. Nombre des cas de décès d'après les statistiques de l'infirmierie.

	1984	1985	1986										
	J - D	J - D	J	F	M	A	M	J	J	A	S	O	
diarrhée													
rougeole													
.....													

8. Personnel de l'infirmierie:

Nombre d'infirmiers/mières:

Nombre de sages femmes:

Nombre de guérisseurs:

Instructions pour l'exécution de l'échantillonnage

Dans chaque village, 30 ménages seront interviewés. Ces ménages doivent être choisis au hasard en utilisant la procédure suivante:

1. Numérotez tous les ménages du village;
2. Divisez le nombre de ménages dans le village par 30 (par exemple 84 divisé par 30 font 2,8);
3. Arrondissez si cela est nécessaire (dans notre exemple 2,8 est arrondi à 3; cela signifie qu'un ménage sur trois sera visité);
4. Décidez par quel ménage (numéro 1, 2 ou 3) vous commencerez. Pour cela tirez un nombre au hasard et commencez les visites par le ménage portant ce nombre (par exemple, si nous tirons le nombre 2, les ménages numérotés 2, 5, 8, etc. devront être visités);
5. Si les calculs ci-dessus donnent moins de 30 ménages, divisez le nombre total de ménages par la différence (dans notre exemple, si nous visitons un ménage sur trois nous n'en visiterons que 28 au lieu de 30; la différence est 2; divisions 84 par 2, ce qui donne 42; le premier des deux ménages restant à être visité portera le numéro $42 : 2 = 21$ et le deuxième portera $21 + 42 = 63$; dans notre exemple nous devons donc visiter les ménages numérotés comme suit: 2, 5, 8, 11, 14, 17, 20, 21, 23, 26, etc.).

Annex 6

Summary overview of water source selection for human consumption

Table A Overview water sources used for human consumption in the rainy season (N=208)

Village	Water Source				
	rain	well	pond	canal	river
Prey Moul	28	1	5	0	0
Kap Kong	28	1	6	1	0
Kmut	16	17	0	1	0
Char	10	24	1	0	0
Prey Sampor	22	17	2	0	5
Bakou	25	0	0	0	12
Prey Kei	23	14	4	0	0
Total	152 (73%)	74 (36%)	18 (9%)	2 (1%)	17 (8%)

Table B Overview water sources used for human consumption in the dry season (N=208)

Village	Water Source				
	rain	well	pond	canal	river
Prey Moul	-	0	30	0	0
Kap Kong	-	14	23	0	0
Kmut	-	29	0	2	0
Char	-	30	0	0	0
Prey Sampor	-	24	0	0	11
Bakou	-	0	0	0	29
Prey Kei	-	22	11	0	0
Total	-	119 (57%)	64 (31%)	2 (1%)	40 (19%)