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203.2-97ME-13881-1

MEASURING CHANGE IN BEHAVIOUR;

AN ANALYSIS OF A PARTICIPATORY EVALUATION METHOD IN HYGIENE
EDUCATION FOR WATER AND SANITATION

Thesis submitted in partial fulfilment of the requirement for the degree of

Master of Public Health

by

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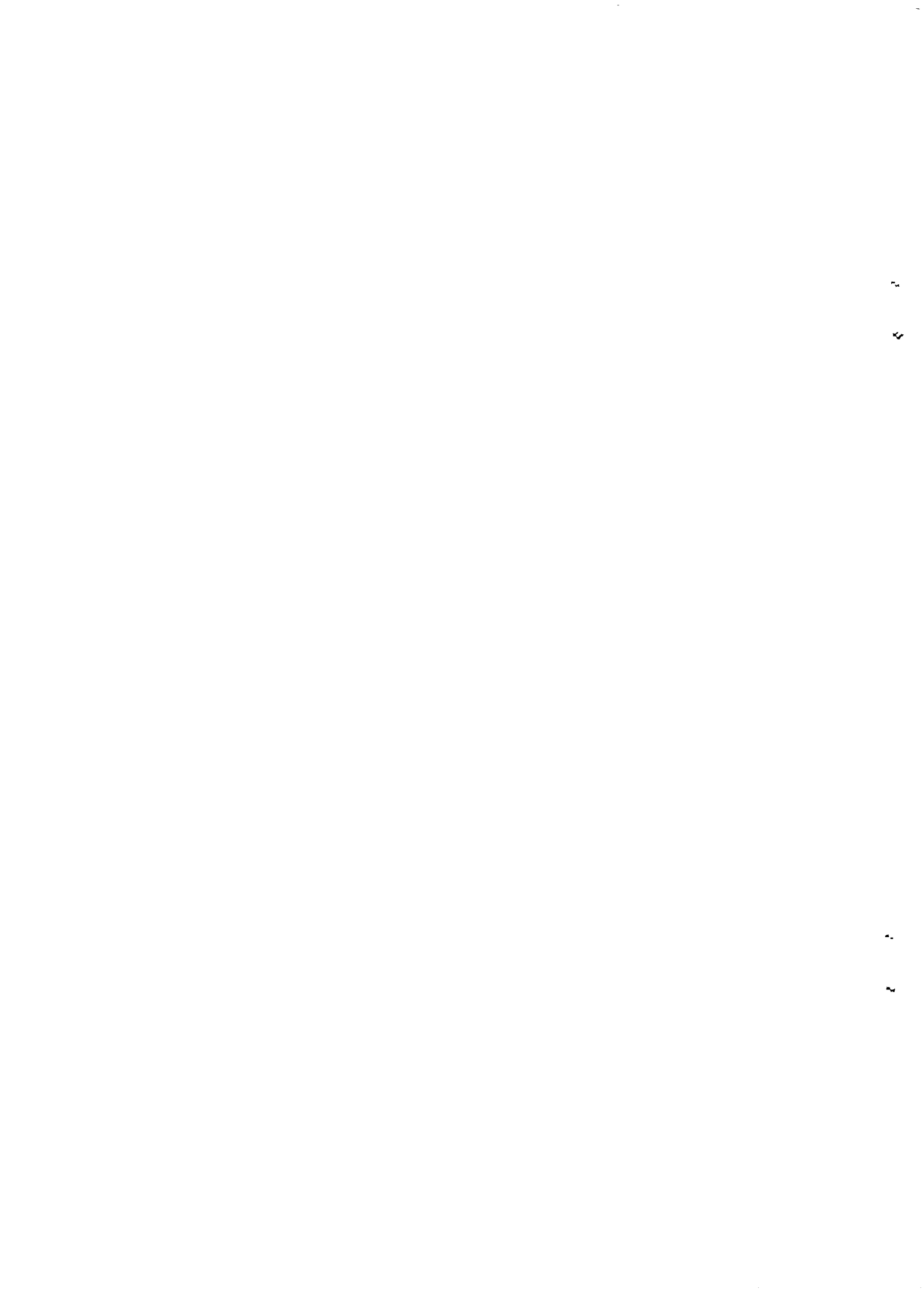
The Netherlands

33rd International Course in Health Development (ICHD)
Royal Tropical Institute (KIT)
Amsterdam, The Netherlands

May 1997

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4

TABLE OF CONTENTS

ABSTRACT	iii
LIST OF ABBREVIATIONS	v
LIST OF FIGURES AND BOXES	vi
MAP OF BURKINA FASO	vii
INTRODUCTION	1
1 BACKGROUND INFORMATION	3
1.1 BURKINA FASO AND BOUC DU MOUHOUN	3
1.2 THE RURAL WATER PROJECT AND ITS HYGIENE EDUCATION COMPONENT	5
1.3 OBJECTIVES AND STRATEGY OF THE HYGIENE EDUCATION PROGRAMME	6
1.4 CHOICE OF MESSAGES AND ACTIVITIES	7
1.5 EVALUATION OF THE PROGRAMME	9
1.6 STATEMENT OF THE PROBLEM	12
2 MEASURING CHANGE IN BEHAVIOUR: EVALUATION	14
2.1 INTRODUCTION	14
2.2 EVALUATION DESIGNS FOR MEASURING BEHAVIOURAL CHANGE ..	15
2.3 CHOOSING INDICATORS	15
2.4 DATA COLLECTION METHODS	16
2.5 ANALYSIS AND INTERPRETATION	17
2.6 PARTICIPATORY EVALUATION	18

Table of Contents

3	ANALYSIS OF THE EFFECT EVALUATION IN BOUCLE DU MOUHOUN	21
3.1	ELEMENTS OF ANALYSIS	21
3.2	EVALUATION DESIGN	21
3.3	RELEVANCE OF MESSAGES	23
3.4	VALIDITY OF INDICATORS	27
3.5	SELECTION PROCEDURES FOR INDICATORS	29
3.6	DATA COLLECTION METHODS	30
3.7	DATA ANALYSIS AND INTERPRETATION	34
3.8	PARTICIPATION OF THE VILLAGE HEALTH TEAMS	38
3.9	THE PROCESS EVALUATION	39
4	CONCLUSION AND RECOMMENDATIONS	40
4.1	CONCLUSION: SWOT-ANALYSIS OF THE EFFECT EVALUATION	40
4.2	RECOMMENDATIONS	41
	REFERENCES	44
	ANNEXES	47
	ANNEX 1: KEY-BEHAVIOURS FOR PREVENTION OF WATER AND SANITATION-RELATED DISEASES	
	ANNEX 2: COMPOSITION AND ORGANIZATIONAL STRUCTURE FOR FIELD ACTIVITIES	
	ANNEX 3: CALCULATIONS OF TIME SPENT ON EVALUATION	
	ANNEX 4: EXAMPLES OF OBSERVATION SHEETS	
	ANNEX 5: EXAMPLES OF SPREAD SHEETS FOR EVALUATION DATA	

ABSTRACT

In Boucle du Mouhoun, a region in north west Burkina Faso, 53% of the consultations in health centres can be attributed to water and sanitation-related diseases. Prevention of these diseases is possible. An effective way to reduce the incidence of water and sanitation-related diseases is by improving hygienic behaviour. The Rural Water Supply Project of Boucle du Mouhoun therefore developed in collaboration with the Ministry of Health a hygiene education programme. A regional team was established and the programme was executed by this team, the local health staff and the community. Messages were formulated that were based on the non-hygienic practices discovered in the region. They were promoted in cycles of four months using a peer education strategy.

The programme developed a participatory evaluation system comprising a process and an effect evaluation. Behavioural change was measured through structured observations by community members at the beginning and at the end of a cycle. The participatory approach raised questions from the stakeholders with respect to the validity and the reliability of the results.

This thesis describes the pilot phase of the hygiene education programme during which intervention took place in 59 villages. It critically analyzes the effect evaluation with respect to the following aspects: the evaluation design, the relevancy of the chosen messages, the validity of the indicators and their selection procedures, the data collection methods (including reliability of the instrument, bias, selection and training of the observers and the data collection procedures), data analysis and participation. Certain aspects of the process evaluation are briefly reviewed as well.

The main findings and recommendations of this analysis are:

- The evaluation design was relatively effective, although no control group was used. It took on average 10% of the time spent by the actors on hygiene education, which is acceptable.
- The messages addressed the public health problems in the area, but the specific situation in the villages should be better taken into account, for instance with respect to issues such as the use of traditional wells.
- Indicators were chosen on the possibility to observe them and some behaviours were therefore not included in the evaluation. For this reason results could not be generalized.
- Structured observations were used for data collection. However, it appeared to be difficult to develop simple data collection procedures.
- Data analysis was carried out at regional level, although discussions of the data took place with all the actors. Results were presented per province and per village.
- Although participation of the health staff and the community in the effect evaluation is required at all stages, it needs to be more operationalized in the evaluation procedures and in data analysis.

- The aspects of the process evaluation that were reviewed in this thesis were participatory and included all the actors of the programme throughout. However, the underlying theoretical concept of peers influencing behavioural change needs to be evaluated.

In general, the evaluation system was carried out on a continuous basis using a clearly defined system. There are sufficient opportunities to address the weaknesses mentioned above, in order to improve future evaluations.

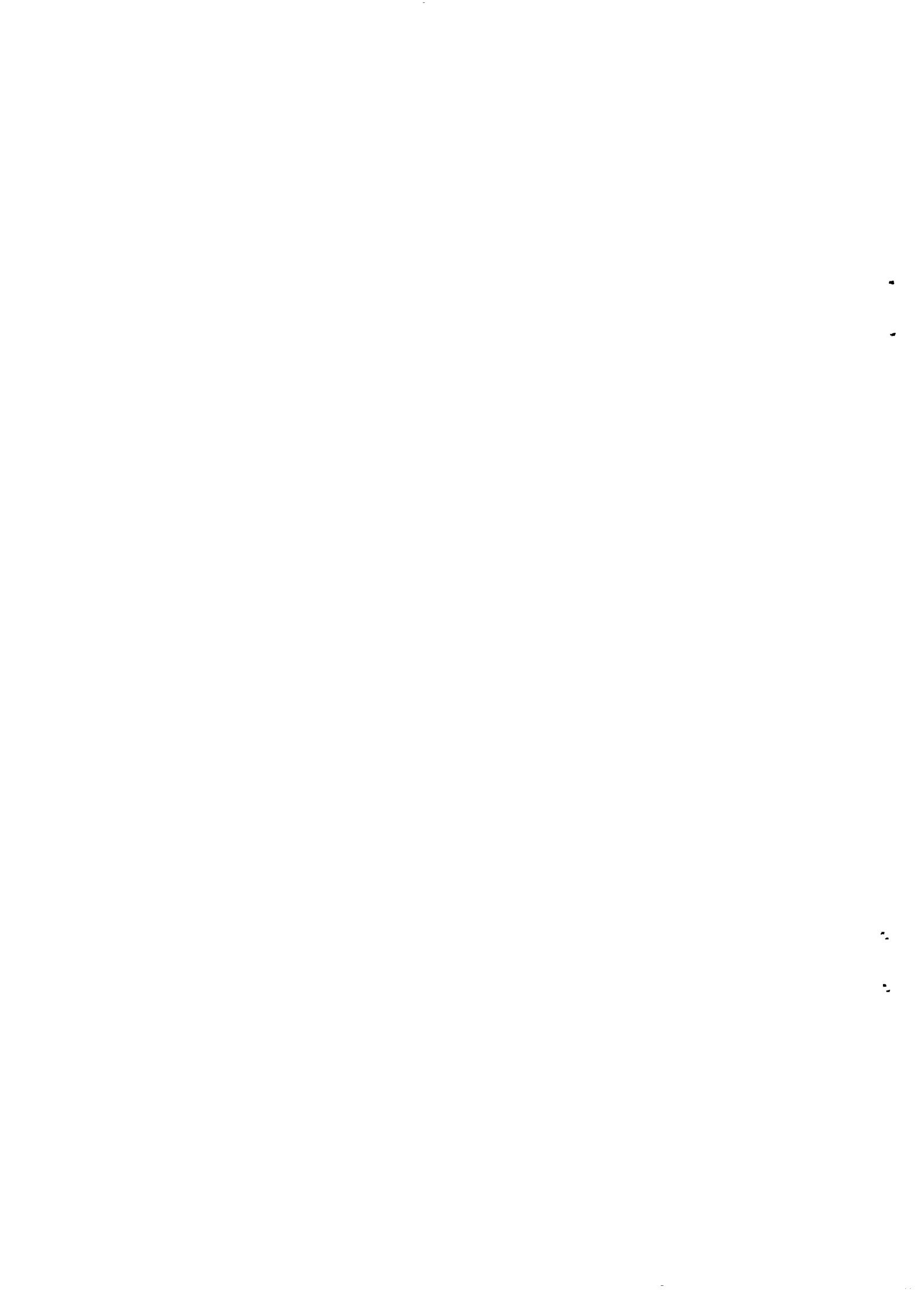
LIST OF ABBREVIATIONS

DHS	-	Demographic and Health Survey
GNP	-	Gross National Product
OVI	-	Objectively Verifiable Indicators
RRA	-	Rapid Rural Appraisal
SWOT-analysis	-	Strengths-Weaknesses Opportunities-Threats analysis
VHT	-	Village Hygiene Team



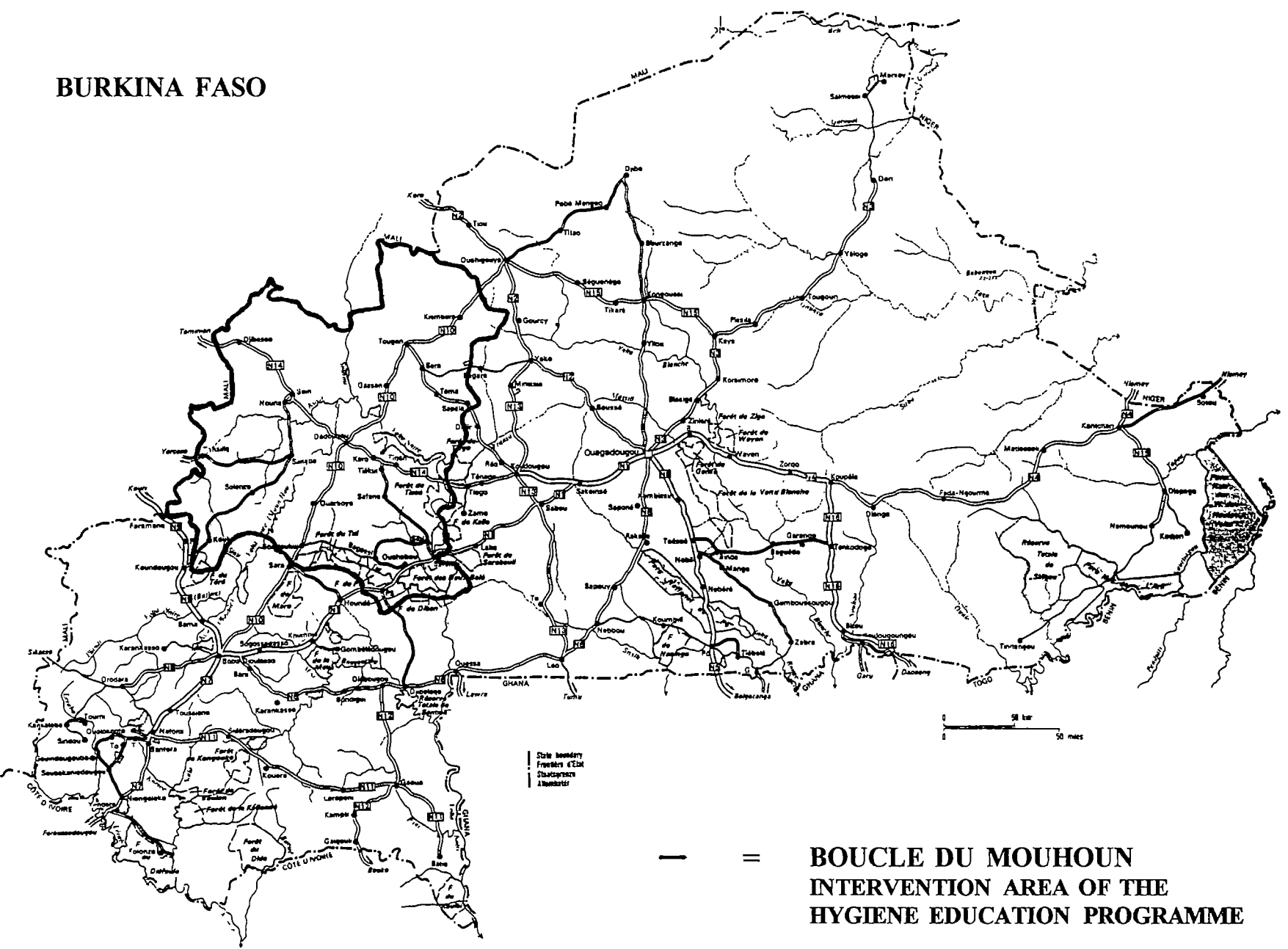
LIST OF FIGURES AND BOXES

Figure 1:	Systems approach of the intervention	10
Box 1:	Morbidity data in the country and in the region related to water and sanitation	4
Box 2:	Classification of water and sanitation-related diseases	4
Box 3:	Main results of the RRA	8
Box 4:	Methods for participatory evaluation	11
Box 5:	Comparison of messages of cycle 1 to key-behaviours in literature . . .	24
Box 6:	Comparison of messages of cycle 2 to key-behaviours in literature . . .	25
Box 7:	Comparison of messages of cycle 3 to key-behaviours in literature . . .	26
Box 8:	Indicators for the evaluation of cycle 1	27
Box 9:	Indicators for the evaluation of cycle 2	28
Box 10:	Indicators for the evaluation of cycle 3	28
Box 11:	Data collection procedure for the first cycle	33
Box 12:	Results of cycle 1	35
Box 13:	Results of cycle 2	36
Box 14:	Results of cycle 3	36
Box 15:	Main actors in different steps of evaluation	38
Box 16:	Points for choosing indicators and instruments	42



BURKINA FASO

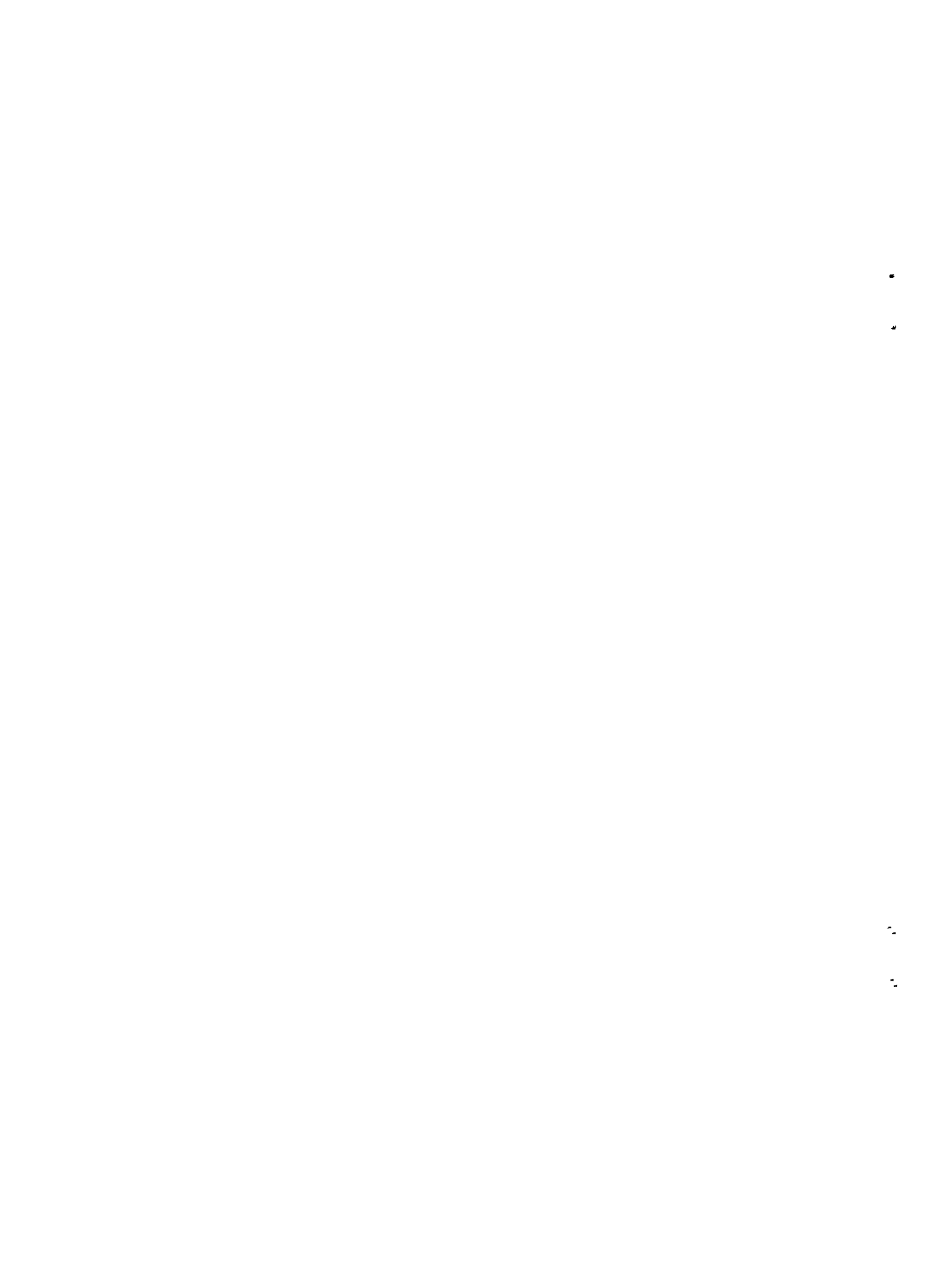
IIA



— State boundary
 — Forests d'Etat
 — Stances
 — Number 1

0 50 km
0 50 miles

— = **BOUCLE DU MOUHOUN**
INTERVENTION AREA OF THE
HYGIENE EDUCATION PROGRAMME



INTRODUCTION

Water and sanitation-related diseases, such as diarrhoea and skin infections, are amongst the main reasons why people consult health centres in Burkina Faso (see 1.1.2). These diseases are important public health problems that can be prevented. Traditionally prevention was thought to be ensured by installing infrastructures for water and sanitation. More and more it is becoming clear that the way people maintain and use the facilities and their hygienic behaviour are of major importance in the prevention of diseases. At present hygiene education is often added to water and sanitation programmes. However, limited resources are usually made available for educational activities and these programmes experience difficulties in finding the right organizational framework. This is due to the fact that behavioural change is a long term process and that such programmes require inter-ministerial collaboration. Yet great successes are expected from these programmes.

Experience teaches that hygiene education is more likely to be effective when using participatory methods. But change in behaviour through the use of these methods is difficult to measure and tangible results from participatory hygiene education activities through a quantification of behavioural change are rarely presented. However, evaluation of hygiene education in water and sanitation programmes is becoming more and more important. The stakeholders of the programme want to see results to justify the existence and continuance of hygiene education.

Participatory evaluation of programmes is often carried out without a clear framework that enables a critical analysis of the method used. To be credible one has to make sure that an assessment of the value of the presented results is possible. However, there is usually a gap between theory and practice of evaluation and of participation.

In this thesis a case study of a participatory hygiene education programme is presented, in which its evaluation method is assessed on the basis of theoretical guidelines for evaluation and participation.

The subject of the case study is the hygiene education programme in Boucle du Mouhoun, an area in north west Burkina Faso, where I worked for a period of two years as a health educator. In the thesis the pilot phase of this programme is described, during which we used a participatory strategy to develop and execute hygiene education in order to achieve behavioural change. We tried to quantify the results by measuring behavioural change in the households through observations by community members themselves at the start and at the end of a period of intensive hygiene education. The results were quantified and presented to different stakeholders of the programme. They posed questions concerning the validity and reliability of the results presented. Due to a lack of time and access to information we were not able to reply.

I hope that this thesis will provide some answers to the questions of the stakeholders and will help the regional team, the health workers and the community in Boucle du Mouhoun to improve their participatory evaluations. It is also intended as a reference for persons involved

in setting up participatory evaluations of health education programmes in the field.

In the first chapter the area and the hygiene education programme are presented, with special emphasis on the evaluation. The second chapter presents evaluation and participation in evaluation from a theoretical perspective. In the third chapter the evaluation in Boucle du Mouhoun is analyzed on the basis of points suggested in chapter 2. Finally, in chapter four a general conclusion with respect to the participatory evaluation is made and recommendations for improvement of the evaluation of the hygiene education programme in Boucle du Mouhoun are given.

1 BACKGROUND INFORMATION

1.1 BURKINA FASO AND BOUCLE DU MOUHOUN

Socio-economic and geographical data

Burkina Faso is a landlocked country in West Africa, covering an area of 274.200 km². It has a population of 9.3 million (Demographic and Health Survey (DHS), 1994:1-3). Boucle du Mouhoun is a region in north west Burkina Faso, which comprises 6 provinces¹ and covers an area of 27.000 km². The provinces are administratively divided into departments, communes and villages. The region has a population of approximately 1.3 million inhabitants² and an estimated 1.000 villages (Projet Hydraulique Villageoise, 1994:1-2). The population density is about 30 people per square kilometre and more than 80% of the villages have a population under 1.500 people. A typical village consists of different quarters, usually divided on ethnic grounds.

There are various ethnic groups living in Boucle du Mouhoun, amongst which the Bobo, Peulh, Dafing, Samo, Gourounsi and the Mossi are the most prominent. These groups speak their own language, but the common language spoken in the region is Dioula. The main sources of income for the population in this region is cultivation of cotton in the south of the province Kossi and in the province of Mouhoun. In the north of Kossi and in the adjacent province of the Sourou agriculture at subsistence level and traditional animal husbandry are practised. In general the income of the community is low. Burkina Faso ranks amongst the poorest countries in the world, with a Gross National Product (GNP) of 290 US\$ per capita (Worldbank, 1993:238).

The climate in the region is "soudano-sahelien", with an average rainfall of 600- 900 mm per year. There is one rainy season per year, which runs from May- June to September- October. During this period the villagers spend most of their time in the fields. Harvests are in November- December. The area is mainly savanna bush (Agricultural University of Wageningen, 1994:7-9).

Countrywide the educational level is low: net school enrolment in 1990 was 29% and the adult illiteracy rate is very high, 82% amongst men and 91% amongst women (Worldbank, 1993:238/294).

Health data

The country's life expectancy at birth is 48 years (Worldbank, 1993:292) and the crude death rate is 16.4 per 1000 inhabitants, with an infant mortality rate of 114 per 1000 live births (DHS, 1994:3). The morbidity data presented in box 1 are limited to those which are relevant

¹ At the time of execution of the intervention described in this thesis the region had only 3 provinces: Kossi, Sourou and Mouhoun.

² According to adjustment of the population census of 1985 by an annual growth rate of 2.9 %.

to the intervention in Boucle du Mouhoun; the water and sanitation-related diseases that can be prevented by improvement in water and sanitation infrastructures and/or hygienic behaviour. They are amongst the main causes of morbidity in the country, as well as in the region.

Box 1: Morbidity data in the country and in the region related to water and sanitation

DISEASE	BURKINA FASO	BOUCLE DU MOUHOUN
Malaria	30 %	25 %
Skin infections, mainly small wounds	15 %	11 %
Diarrhoea	10 %	6 %
Eye infections, mainly conjunctivitis	5 %	7 %
Intestinal parasites (worms)	5 %	4 %

Source: Ministry of Health of Burkina Faso, 1994

Water and sanitation-related diseases can be categorized into five environmental classifications, shown in box 2.

Box 2: Classification of water and sanitation-related diseases

CLASSIFICATION OF WATER AND SANITATION-RELATED DISEASES		
		<u>Examples of diseases</u>
1	Water-borne (faecal-oral)	- Faecal-oral: Diarrhoea and dysentery
2	Water-washed	- Faecal-oral: Diarrhoea and dysentery - Superficial water washed, such as skin and eye infections
3	Water-based	- Schistosomiasis and Guinea worm
4	Water-related insect vector	- Sleeping sickness, Filariasis, Malaria, River blindness, Yellow fever, Dengue
5	Sanitation-related	- Hookworm

Source: Massee Bateman, 1994 30

Countrywide and in the region the overall percentage of consultations for water and sanitation-related diseases is over 50%, respectively 65% and 53%. In the region the main cause for consultation is malaria (25%) classified in the water-related insect vector group, followed by superficial water-washed diseases (18%). The group of faecal-oral transmitted diseases, the worms and diarrhoea, are 10% of the total consultations. The faecal-oral transmitted diseases can be grouped under water-borne and water-washed.

The data in box 1 are institution-based data and stem from the registration of consultations in the health centres. This could mean that certain symptoms and signs are under-reported because they are treated at the household level. A national survey conducted in 1993 presented more specific data on the prevalence of diarrhoea in children under five years of age. This survey showed that 21% of these children in the rural areas suffered from

age. This survey showed that 21% of these children in the rural areas suffered from diarrhoea. Mothers living in west Burkina Faso, which includes Boucle du Mouhoun, went for consultation in 10% of the cases, others treated the diarrhoea in the household or did not treat it at all (DHS, 1994:109-114).

1.2 THE RURAL WATER PROJECT AND ITS HYGIENE EDUCATION COMPONENT

A lack of clean and sufficient water has been a problem since long in Boucle du Mouhoun. From 1980 to 1993 the Ministry of Water and Environment's regional office has attempted to solve this problem by the installation of wells and pumps through a project called "Projet Hydraulique Villageoise de la Boucle du Mouhoun" (Village Water Supply Project of Boucle du Mouhoun). The project was financed by the Ministry of Development Cooperation of the Netherlands. During the last years of the project emphasis was put on the installation of pumps as the quality of pump water is assumed to be better than that obtained from wells. An evaluation in 1993 of the fourth phase of the project brought to light that the pumps and wells constructed in the villages were not being properly maintained. The evaluation also revealed that drinking water taken from the water points was being polluted during transportation and storage.

Because of the above mentioned factors and the health data on the incidence of water and sanitation-related diseases mentioned in box 1 a hygiene education component was added to phase V of the project. This component was developed and executed in close collaboration with the Ministry of Health.

The hygiene education programme aims at behavioural change in order to reduce the incidence of water and sanitation-related diseases. Several studies have proved that behavioural change has a positive impact on the reduction of the incidence of these diseases (Van Wijk, 1994:1). Cairncross (1994:23) writes that behavioural change has the most significant impact on the incidence of diseases. He adds that if no change in behaviour is achieved in a water and sanitation programme, the only health benefits can be expected from the improvement of the quality of water. However, such benefits are in fact negligible.

The hygiene education programme in Boucle du Mouhoun, that started in May 1994 and will continue until 1998, consists of two phases:

- A A pilot phase of 1.5 years in which the strategy was developed and tested in a limited number of villages (59 villages) in the intervention area. This phase was followed by an internal evaluation to adapt the strategy where necessary.
- B An execution phase of 2.5 years in which the programme is extended to another 60 villages in the area.

In this thesis the pilot phase will be subject of analysis and the description of the programme in the following paragraphs refers to this phase.

1.3 OBJECTIVES AND STRATEGY OF THE HYGIENE EDUCATION PROGRAMME

Objectives

The hygiene education programme has as a general objective:

To contribute to a reduction of the morbidity and mortality due to water and sanitation-related diseases.

In line with Narayan (1994:2) the programme has chosen not to quantify and measure this goal, because impact evaluation is difficult and expensive to measure on a continuous basis. Instead, the programme has opted for the following three intermediate objectives³:

- A To develop a hygiene education strategy adapted to the local situation, that can be applied to the whole region.
- B To improve hygienic practices in the households and at village level.
- C To reinforce the Ministry of Health in the region with respect to hygiene education in order to ensure sustainability of the programme.

Success of the programme is assessed through the measurement of the indicator of objective B: *Behavioural change at village level and in the households.*

The achievement of this objective should be regarded as a contribution to the reduction of morbidity related to water and sanitation and finally to the improvement of the health status of the community of the Boucle du Mouhoun.

Strategy

A participatory strategy has been chosen for the execution of activities.

The key-elements of this strategy are:

- Participation of the target group in the preparation, execution and evaluation of hygiene education;
- Peer education at village level, in other words: villagers educating villagers;
- Interpersonal communication and locally conceived and produced visual aids;
- Regular training and an intensive follow-up programme executed by health workers;
- Hygiene education in periods of four months, called cycles, with simple messages that the villagers can put into practice.

Although the chosen approach is based on intuition and experience gained from other programmes, it appears closely linked to the main principles of the Social Learning Theory of Bandura. According to this theory, the social environment plays an important role in the acquisition of new ideas and behaviours of individuals. This is because local values and

³ The objectives are not in order of importance

norms influence people's attitudes and the way they behave. By changing these community values and norms large-scale behavioural change is more likely to be obtained (Bracht, 1990: 45). The creation of social networks is one way to enable a person to learn and adopt a new behaviour from persons around him or her (Bracht, 1990:52-53). In the hygiene education programme in Boucle du Mouhoun Village Hygiene Teams (VHT) were established amongst the local community. These teams were created to influence the behaviour of peers, and can be considered as the social networks mentioned by Bracht. The team members could act as role models and advocate the idea of being responsible for one's own health.

1.4 CHOICE OF MESSAGES AND ACTIVITIES

Choice of messages

Not all water and sanitation-related diseases can be avoided just by hygienic behaviour, but much can be done to prevent their transmission. Boot defines hygienic behaviour as: "*a wide range of actions associated with the prevention of water and sanitation-related diseases*" (Boot, 1993:6). She divides behavioural measures for prevention of water and sanitation-related diseases into the following areas:

- Disposal of human faeces
- Use and protection of water sources
- Water and personal hygiene
- Food hygiene
- Domestic and environmental hygiene

For each area key-behaviours have been defined by Boot and further specified by Narayan. These are presented in annex 1.

Among the above mentioned areas the use and protection of water sources as well as water hygiene were topics of the hygiene education during the pilot phase of the programme. The intervention during this phase was mainly aimed at the reduction of risks via the faecal-oral transmission routes, with an emphasis on water-borne diseases. This choice was related to the history of the programme as described above. The first intervention was linked to the use of the pumps, with as motivation the importance of quality of water. Data presented in box 1 showed that morbidity related to water and sanitation is mainly due to malaria and water-washed diseases. From a public health point of view activities concerning the improvement of the quantity of water used in the households and vector control would have been a more logical choice. Especially because these topics are not specifically dealt with in the region by the Ministry of Health.

In order to determine the non-hygienic practices with respect to use and protection of water sources and to water hygiene in the field, a baseline study was carried out with the health workers and the population of some of the intervention villages. Using the Rapid Rural

Appraisal (RRA) method⁴ eighteen non-hygienic practices related to drinking water were discovered. These practices were regrouped in three themes: water collection and transportation, water storage and taking drinking water and the maintenance of water points. The main results are shown in box 3.

Box 3: Main results of the RRA

SUMMARY OF NON-HYGIENIC PRACTICES IN THE BOUCLE DU MOUHOUN	
Water collection and transportation	
-	People don't wash their hands before taking water
-	The water containers are not or badly washed before taking water
-	Water containers are not covered
-	During transportation hands are touching the water
-	Objects for balancing water during transportation are not at all or badly washed
-	At the wells the bucket is put on the ground
Storage and taking drinking water	
-	The container for storage of drinking water is in the courtyard
-	The container for storage of drinking water is on the floor
-	The container for storage of drinking water is not at all or badly covered
-	The cups for drinking water are often dirty
-	The cups for drinking water are anywhere to be found
-	At the moment of taking drinking water from the container the hands touch the water
Maintenance of water points	
-	There are often puddles at the water points
-	A lot of water points don't have a fence
-	The wells often don't have a drainage system
-	The drainage system of the pumps are often not maintained
-	Women wash their clothes near to the water point
-	Traditional wells are not reinforced

For each theme messages were elaborated, which are shown in chapter 3.3. In that paragraph the extent to which these messages are in line with the key-behaviours mentioned by Boot and Narayan will be discussed.

Hygiene education activities

Each theme was elaborated in a hygiene education cycle of four months. Per year only two cycles could be executed due to the non availability of the villagers during the agricultural season. The choice of cycles was based on the philosophy that behavioural change is more likely to be achieved by developing step by step (cycle by cycle) the different non-hygienic practices discovered during the baseline study. Once one cycle had been completed, the next logical theme was developed. During a cycle a maximum of five to six messages were promoted. These messages were chosen and formulated in Dioula with the help of the

⁴ Rapid Rural Appraisal is a rapid study executed by a multidisciplinary team, that uses a combination of methods for data collection amongst different study populations.

villagers, made into a pictorial series, and tested in the field for their practicability.

During the pilot phase the inhabitants of each neighbourhood of the 59 selected villages were asked to choose a man and a woman who would be willing to execute hygiene education activities one day per week. Each village consisted of on average four neighbourhoods. The selected men and women from these neighbourhoods formed the Village Hygiene Team. They visited each household in a particular neighbourhood twice every four months. The first visit was to explain with the help of a series of drawings the non-hygienic practices discovered in their village, the consequences of these practices, and which behavioural changes should be adopted. The second visit which took place two months later focused on discussing whether or not the household had changed its hygienic behaviour. The teams also organized group meetings for men and for women in the neighbourhoods to discuss on a broader level the hygiene education messages. During the pilot phase an average of 460 team members worked voluntarily in the 59 villages. A non financial motivation system was set up to encourage the members in their work. Small items such as a bar of soap or a jerry can for water transportation were given to each member per cycle.

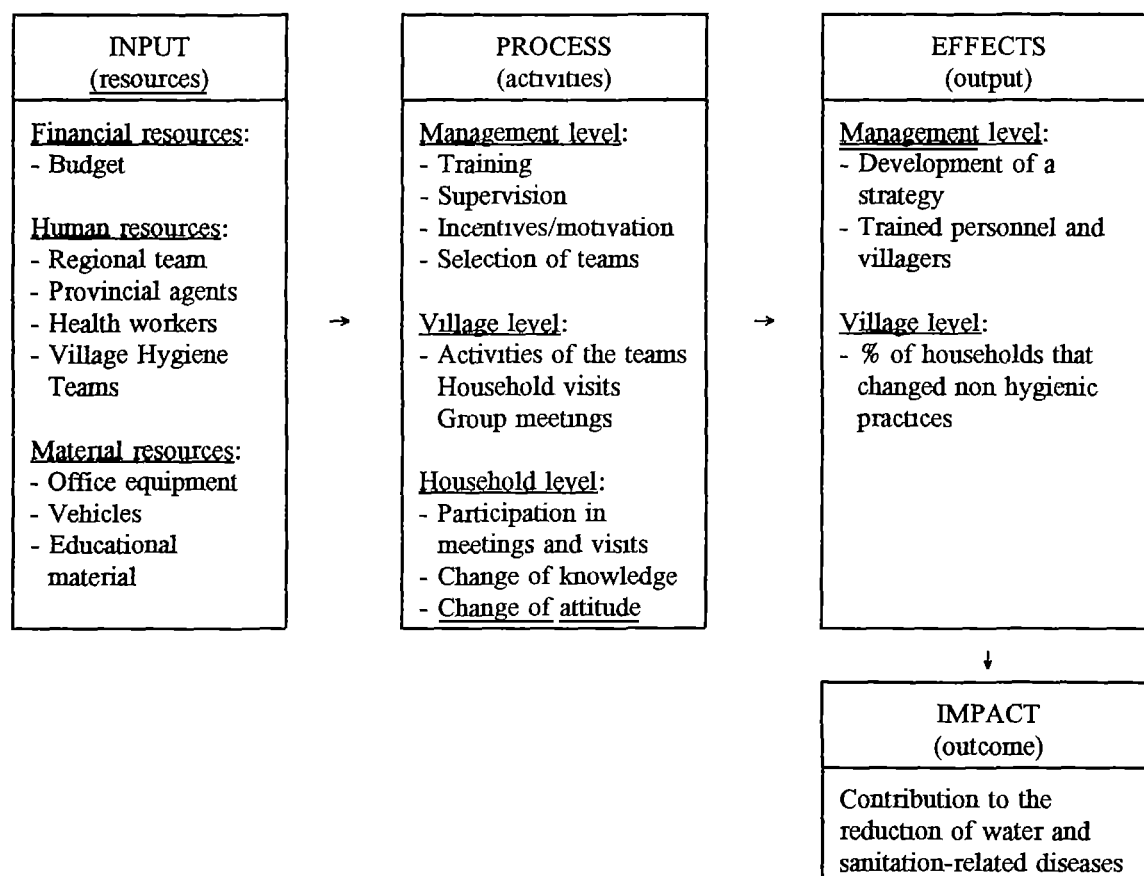
The Village Hygiene Teams were trained in the execution of household visits and group meetings by local health workers, who followed up the hygiene education activities as well⁵. The 59 villages were equally divided over 15 local health centres throughout the region. In each local health centre two people were responsible for the implementation of the programme. These health workers were trained and followed up by a provincial agent, who was in turn trained and supervised by the regional team. The composition of the teams and the organizational structure for the field activities are shown in annex 2.

1.5 EVALUATION OF THE PROGRAMME

The programme gave much attention to the development of a monitoring and evaluation system. The aim was to evaluate effects of the programme and it was based on the systems approach. According to this approach the programme is divided into input, process and output or effects as is shown in figure 1.

⁵ Training took place in Dioula.

Figure 1: Systems approach of the intervention



Three aspects of the programme were evaluated:

- A The process, that is the activities carried out during the intervention at all levels.
- B The effects, that is the behavioural change that occurred at household level after the intervention.
- C The relation between the input and the effects; a cost-benefit analysis.

The cost-benefit analysis was assessed through project documents; it took place at regional level. The other two aspects were measured through a participatory evaluation. This meant that the main actors of the educational intervention, the VHT, played an important role in the collection of the data and discussion of the results. This had two purposes:

- A To make the VHT aware of the non-hygienic practices present in their neighbourhoods;
- B To discuss with them changes that occurred after the educational intervention.

The participatory evaluation can be regarded as a tool for empowerment. The VHT had a possibility to assess the strengths and weaknesses of their own activities and to contribute to the improvement of the hygiene education in their villages. As such it was a motivation for action at community level, because people understood better what was being done, why and

with what results and therefore they were expected to be more open to discussions for change. Box 4 shows the methods used for the participatory evaluation of the process and effects of the programme.

Box 4: Methods for participatory evaluation

Evaluated aspects	Methods/ instruments	Results, giving an indication of:
Process	<ul style="list-style-type: none"> - Village maps indicating the households and drawn by Village Hygiene Teams - Monthly progress meetings between the VHT and the health workers - Supervision reports written by health workers - Field visits by regional team - Registration of VHT members during training and at the end of a cycle - Interviews of households by health workers - Evaluation meetings with health workers and VHT 	<p>Number of visits and meetings carried out by the VHT</p> <p>Progress of the hygiene education during a cycle as perceived by the VHT and their motivation to continue</p> <p>Quality of household visits and number of activities carried out by the health workers</p> <p>Quality of activities of health workers</p> <p>Drop-out rate of members of VHT</p> <p>Knowledge of hygiene messages at household level</p> <p>Perception of VHT and the health workers on the hygiene education cycles</p>
Effects	<ul style="list-style-type: none"> - Observation by Village Hygiene Teams (OVI) 	Behavioural change at household level

Process evaluation

At management level the number of training and supervision activities executed by the health workers were assessed by registering the supervision reports of these health workers. The quality of their activities was assessed during field visits by the regional team. The drop-out rate of the members of the VHT was calculated at the end of every cycle so as to assess the motivation of these teams.

At village level the number of household visits and group meetings carried out were measured by analyzing the maps drawn by the VHT. The VHT were asked to draw a map of their neighbourhood at the beginning of each cycle. During the intervention they marked on this map every household visited and the place of every group meeting organized. At the end of the cycle the health workers and VHT counted the amount of households visited and the amount of group meetings organized with the number of participants. This gave an indication of the number of households reached during one cycle.

The quality of the activities executed at village level was estimated by analysis of the supervision reports submitted by the health workers to the provincial health agent. In these reports the household visits, the group meetings and the progress meetings between the VHT

and the health workers were qualitatively described. The quality of the household visits and the group meetings were assessed according to criteria set up by the health workers and the regional team.

The hygiene education cycle was evaluated with the VHT and the local health workers in meetings organized at the end of the cycle, during which suggestions to improve the hygiene education in the future were made as well.

These data were complemented by interviews at household level, executed by health workers. The aim of the interviews was to evaluate how many households remembered the messages of the VHT. In this way the level of knowledge in the households was measured. This is of importance because knowledge is considered as part of the process leading to behavioural change. After each cycle the health workers chose in every neighbourhood of the 59 villages two households in which they asked the inhabitants to recall the messages that were promoted during the cycle.

Effect evaluation

As shown in box 4, the effects of the hygiene education activities were measured through observation, using Objectively Verifiable Indicators (OVI). For every hygiene education cycle a limited amount of indicators were chosen and the VHT carried out observations in the beginning and at the end of every cycle. The aim was to have an indication of the percentage of change obtained amongst all households in a village.

The results of both the effect and the process evaluation were analyzed by the regional team. The health workers and the VHT received feedback of the results during training for the next hygiene education cycle.

1.6 STATEMENT OF THE PROBLEM

The hygiene education programme has two years experience with participatory evaluation of the process and the effects of the intervention. The results have up to now been used to communicate the successes and the failures to the stakeholders of the programme. However, as mentioned in the introduction, questions were asked with respect to the results of the programme. The main question, especially for the project management and the Ministry of Health was:

How valid and reliable are the results using a participatory evaluation method ?

This question concerned the methods as well as the indicators and actors used for the effect evaluation. The main question can be divided into the following study questions, which I will try to answer in this thesis:

- How appropriate was the evaluation design, that is:
What was its effectiveness and cost-efficiency ?

- How relevant were the messages from a public health point of view⁶?
- How valid were the indicators ?
- What were the selection procedures for these indicators ?
- How reliable was the measuring instrument, that is the observation sheets ?
- What confounding variables could exist ? Were they taken into account ?
- How appropriate were the data collection procedures ?
- How was the data analysis and were these results used to adapt the programme?
- How participatory has the effect evaluation in reality been ?

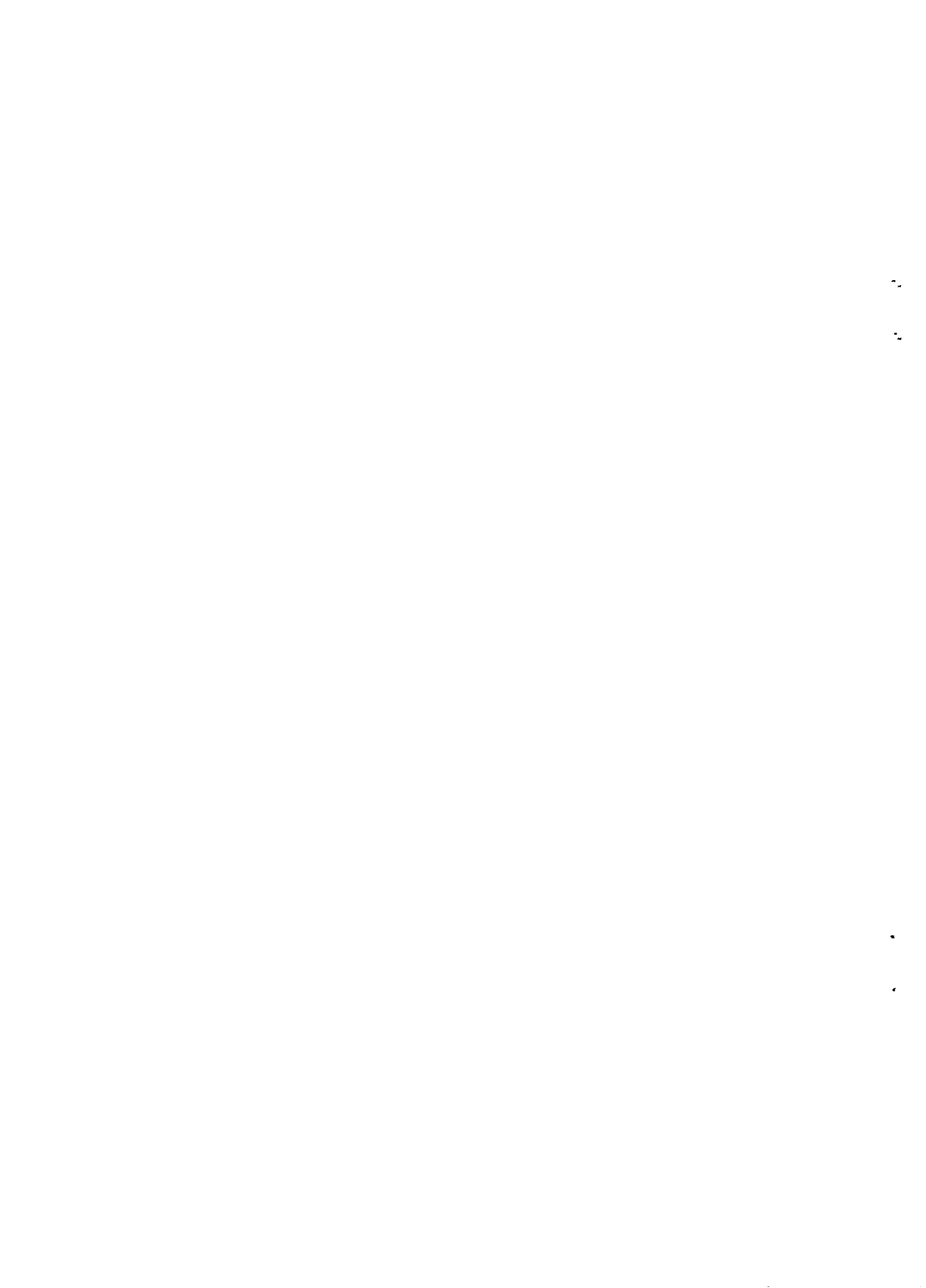
Based on the answers of these questions adaptations of the evaluation method will be suggested in order to improve validity and reliability of the participatory evaluations of behavioural change within the programme.

During the literature review for the present thesis one other study question has been added to the above questions:

- Has a behavioural model been used during the development of the programme and has the evaluation been accordingly ?

Written experiences on participatory evaluation of behavioural change in hygiene education are rare and a set of indicators and methods for participatory evaluation does not (yet) exist. As Hubley writes: "*The challenge ahead is to develop quantitative measures of determinants of change that can be used by ordinary field workers. The other important way forward is to look more closely at small-scale research methods, qualitative methods and participatory evaluation models where field workers and the community can work together to evaluate a programme with a minimum of external specialised research input*" (Hubley, 1994:143).

⁶ The regional team did not evaluate the relevance of the chosen messages with respect to solving public health problems. The team limited itself to the appropriateness of the messages by considering the non-hygienic practices discovered in the baseline study.



2 MEASURING CHANGE IN BEHAVIOUR: EVALUATION

2.1 INTRODUCTION

Green (1986:171) defines evaluation as: "*the comparison of an object or instrument against a standard of acceptability*" and Feuerstein (1986:2) uses the following definition: "*evaluation is to assess the value of something*".

Evaluation is often regarded as the measurement of the output of the intervention, with the emphasis on the effects. In health education one does not just measure the effects; the process is equally important. The process involves community participation in problem-solving, decision making and the management of resources. These skills are even more important because they are preconditions to change (Hubley, 1994:142). Furthermore, the process is supposed to enhance empowerment. Therefore it would not be correct to only measure the effects in terms of behavioural change.

Green distinguishes different kinds of evaluation, depending on the objectives⁷:

- **Process evaluation**
This is the analysis of the quality and implementation of an intervention, with as a goal the control and assurance of quality. In the case of the programme in Boucle du Mouhoun the process evaluation assesses the activities that have been executed.
- **Effect evaluation**
The effect evaluation assesses the immediate effects the programme has had on the dependent variable. In other words: whether the specific objectives of the programme have been achieved. For our hygiene education programme it answers the question whether the hygienic behaviour at household level has improved.
- **Outcome evaluation**
In this type of evaluations the reduction of incidence or prevalence of certain diseases is measured. In our programme the reduction of incidence in morbidity related to water and sanitation would have to be assessed.

In the programme under analysis the process and effect evaluation have been used (see 1.5). Therefore outcome evaluation will not be reviewed. Process and cost-effect evaluation will be marginally described, the emphasis will be on the effect evaluation as described in 1.6.

This chapter will review evaluation from a theoretical perspective. The review will be limited to the points related to the study questions, which are evaluation design, validity and selection of indicators, reliability of instruments, data collection, data analysis, participation and certain aspects of the process evaluation.

⁷ In this thesis different terms are used than Green does: "process evaluation" is called by him "formative evaluation" and "effect evaluation" he refers to as "impact evaluation".

2.2 EVALUATION DESIGNS FOR MEASURING BEHAVIOURAL CHANGE

There are several designs for effect evaluation. Green (1986:198) cites five elements that should be followed if a true experimental design is used:

- A Representative sample of target population or programme recipients
- B One or more pretests
- C Unexposed group for comparison
- D Random assignment of the sample to experimental and control groups
- E One or more post tests to measure effects after the experimental intervention

These elements can be used as a guideline when developing an evaluation, but in practice many health education programmes are not able to comply with all these elements. Often they opt for a quasi-experimental design, in which at least one of the elements of a true experimental design is not included (Varkevisser, 1991:128). A methodological review of 67 published articles by Loevinsohn (1990:788-792) revealed that only 45% of the health education programmes that were published in articles used a control group.

Most of the evaluation designs used in hygiene education interventions:

- contain a before and after intervention test (pretest-post test)
 - are carried out with or without control groups
- Designs that have an experimental and a control group are often more difficult to execute in practice because of ethical reasons and they require the expertise of a researcher (Boot, 1993:111-112).

The evaluation analyzed in this thesis is based on a "one group pretest-post test design", that is a before and after intervention test, without control group.

2.3 CHOOSING INDICATORS

An indicator is a marker (Feuerstein, 1986: 23). Good indicators are very important if an intervention has to be proven as useful. They are the link between the objectives and actions taken and they should be objective and based on concrete measurements (WASH, 1992:8). Measurement is facilitated through the definition of clear indicators. Indicators determine the validity of the evaluation instrument. Green defines validity as "*the extent to which the instrument adequately measures the concept under study*". There are several types of tests to measure validity. The test of importance in this context is the content validity, which assesses whether the indicators adequately measure the specific aspects of a concept (Green, 1986:101). He advises to assess the content validity through a process of literature review, empirical research and personal reflection combined with dialogue and exchange with colleagues. Another possibility is to judge the validity through face and consensual validity, that is judgement by an external expert or a panel of experts.

Simpson-Hébert (1994:173) describes lessons learned after an experience about the development of indicators in a hygiene education programme. They seem useful advice to be

taken into consideration when developing and evaluating indicators and they are listed below:

- Indicators should be suited to the local situation.
The choice of indicators should take into account not only the behaviours particular to the situation, but also the actors responsible for data collection, data analysis and reporting.
- Indicators should be simple, easily visible and non-intrusive (to private behaviour of the persons who are observed).
- There should be a limited number of indicators used for the evaluation.
- They should be geared to indicating an action that could be taken to improve the situation.

2.4 DATA COLLECTION METHODS

In the programme under analysis structured observations were used as method of data collection for the effect evaluation. Sometimes behaviours were looked at directly when being performed, for instance taking water from a pump. If that was not possible physical clues were used, that are variables in the environment that indicate a certain behaviour. An example of a physical clue is a dirty slab of a latrine indicating the behaviour "not cleaning the latrine" (Boot, 1993:50).

Kedall and Gittelsohn (Cairncross, 1994:88) define structured observations as "*a quantified record of a behaviour or behaviours collected by a trained observer, through use of a pre-coded or partly coded data collection instrument*". Different types of observations and in more detail structured observations have been described in various publications by Bentley (1994), Boot (1993) and Cairncross (1994).

Several aspects have to be taken into account when designing a procedure for structured observations. These are:

- Assurance of optimal reliability of data collection instruments.
The reliability of instruments comprises several concepts (Green, 1986:83). In this context the stability (or test-retest reliability) is of importance. Green defines stability as "*the degree of association between sets of measurement collected at two or more points in time*". It is an operationalization of repeatability and it means similar marking of observations by different observers or by the same observer at different times. Reliability is weakened when there are random or systematic errors in filling out of the instrument. To avoid errors instruments should be adapted to the level of comprehension of the observers, tested beforehand and they should be easy to use.
- Prevention of bias through interaction between observers and the target population.
Bias can be caused by reactivity or the "Hawthorne effect", the influence of the presence of observers on the behaviour of the target population. They will behave differently because of the presence of the observers. Bentley (1994:17) suggests that a way of minimizing the effect is to choose local observers and to take gender into

account. He also advises to involve field workers in the development of the observation protocol.

- Careful selection and training of observers.
Observers should collect the right data in the right way and at the right time. This is particularly of importance to ensure reliability of observations. Observers should make the same judgements of conditions or behaviours observed. The reliability of observers can be better guaranteed by (Kedall and Gittelsohn, 1994:85):
 - 1 Careful selection of observers through use of criteria for education, experience and familiarity with the site;
 - 2 Training in observation and use of instruments that have a standardised scoring;
 - 3 Supervision during data collection, ensuring correct data collection.
- Assurance of ease of data collection and analysis of the instruments
If the data collection procedure is complex and not adapted to the level of comprehension of the observers, errors can easily occur. Complex data analysis causes a time gap between data collection and feedback to the target population and therefore prevents timely adaptation of the intervention when necessary.
- Awareness of possible confounding factors.
In order to avoid a confounding factor of time, in terms of time of the day or seasonality, there is a necessity of repetition of observation in different seasons or at different times of the day. This ensures that reactivity and variability of behaviours are taken into account. When a one-time observation period has been chosen and a comparison has to be made with the results of a baseline study, the data collection during the evaluation has to resemble the data collection of the baseline study (Bentley, 1994:16). Huttly writes in Cairncross (1994:125) that caution has to be made on generalisation of measurements over a longer period of time, because risk factors change over time. An example is a different choice of water sources at different seasons during the year.

2.5 ANALYSIS AND INTERPRETATION

In order to assess the importance of the achieved results, not only the effects, but also the process evaluation data need to be taken into account. This conjunct analysis allows to find reasons for failure or success of the intervention. Green (1986:252-253) distinguishes three points for failing to achieve the defined standard of acceptability of the programme that is evaluated:

- A The performance of the programme is inadequate.
Inadequacy in performance can be a result of poor implementation of the programme because of e.g. a lack of resources or a result of poor execution of activities because of e.g. lack of supervision.

- B The theory or assumptions on which the programme was based is inadequate. This means that the issue has been wrongly addressed. Either the wrong strategy has been used or the outcomes that should have been achieved are not causally related to the intervention. In other words, the problem analysis has not correctly been executed. Green proposes to evaluate the effectiveness of the theoretical framework as well⁸.
- C The measurement has been inadequate. These are pure evaluation failures, due to inadequately elaborated aspects of the data collection procedure which leads to validity and reliability problems, wrongly chosen indicators or a wrongly chosen evaluation design.

In our programme point A has been considered during evaluations as well as parts of point C. However, despite the importance of assessing whether the theory used has been adequately chosen, this has not been considered.

2.6 PARTICIPATORY EVALUATION

Definitions and concepts

Narayan (1994:9) defines participatory evaluation as "*a process of collaborative problem-solving through the generation and use of knowledge. It is a process that leads to corrective action by involving all levels of users in shared decision-making*". Hope and Timmel (1984:120) define participatory evaluation as "*a process of involving participants in programmes to reflect critically on their own projects, programmes, aims and leadership*".

To what extent the community contributes to an evaluation depends on the concept of community participation used during programme implementation. Is the community regarded as passive beneficiaries, only actively involved in execution or as partly owners and therefore also involved in the development, planning and evaluation of the programme? In the intervention in Boucle du Mouhoun the community is seen as active participants and partly owners of the programme.

Evaluation in collaboration with communities that are partners in an intervention allows these communities to judge the progress themselves and to discuss ways of changing certain activities and to adapt them more to their wishes (Srinivasan, 1990:18).

⁸ According to Green measurement of a concept can be distinguished into measurement at a conceptual level and measurement at an operational level. The conceptual level involves the underlying theoretical concepts. For instance, if an intervention is based on the Social Learning Theory, the influence of peers and their compliance to the promoted messages should be measured as well. If only the effect of the intervention in total would be measured, it may result in missing important information on what level the intervention has succeeded and on what level it has failed.

Narayan distinguishes the following characteristics of participatory evaluations (1994:10-14):

- Collaboration with all the participants involved in execution of the programme
- Problem solving orientation
The evaluation is a process empowering the community by learning to understand a problem and to solve it.
- Generation of knowledge
When the community is involved in collecting information, this information will transform into knowledge at their level and facilitate the finding of solutions.
- Release of creativity for those involved in the evaluation procedure
- Use of multiple methods to ensure validity and reliability
- Involvement of experts as facilitators, so as to merge external expertise with locally available knowledge and learning systems.

If the community is a partner in the programme, evaluation procedures and choice of indicators and instruments have to be developed in collaboration with them and have to be adapted to their perception. Methods and instruments must be adapted to the socio-cultural context and the specific conditions under which the intervention has been implemented. If this has been achieved the evaluation can be rendered culturally relevant (from: Workbook by AGKED and MISEREOR in Marsden and Oakley, 1994:23).

Experiences in participatory evaluations

In literature limited information can be found on participatory evaluations in hygiene education. In this last paragraph the use of theoretical concepts in practice is illustrated by four examples. The studies that are described were executed either to collect baseline information on hygiene behaviour or to monitor an intervention. Since the studies were not described with the aim to analyze the value of community participation in contributing to the objective of the study or programme, details of the process of participation were lacking in the description. This limits the analysis of the four examples.

A study on hygiene behaviour in Kerala that aimed at the improvement of the design and implementation of health and hygiene education, involved water committee members in the execution of the study. The study description gives the impression that these members were involved during execution of the study, but not at the time of preparation. Materials used during the study were beforehand discussed in the study team, but it is not clear whether the committee members were part of this team. In this study the community seems a participant in execution. There is no mention of participation of the community in data analysis and discussion (Kumary, 1996:3-5).

A women's health education programme in Bangladesh organized health education sessions in villages on diarrhoea, family planning, nutrition, breast feeding and hygiene. The programme conducted a participatory process evaluation by mapping villages and health activities executed in these villages. The maps were drawn on the soil by women, who were local health educators, using local materials such as sticks, beans and lentils. These women used the maps to assess achievements of their programme and to plan for future activities. Through the drawing of the maps the women could judge which health education topics had

been successful and which topics needed more emphasis in the future. This evaluation is a good example of how the main actors in the community can effectively be involved in evaluation. The women were the main actors in execution, data analysis and discussion, the organizers were just facilitators (Vigoda, 1991:70-74).

A community-based sanitation programme in Kerala applied a monitoring system in which the local committee members (from the community) monitored the effective use of latrines through observation. For evaluation purposes the data were complemented by observations by project staff and by independent evaluation teams. In this example the community was a participant in execution. Discussion of the results with them is not explicitly mentioned (Balachandra Kurup, 1996:34-55). However, through personal information it is known that the data were used at local level to discuss the results and adapt the activities.

A rural water and health project in Guatemala developed a behaviour based monitoring system, in which the community was a partner in programme implementation. The programme measured behaviour through observations and interviews. Monitoring was carried out by different actors at all levels, amongst which community-based health promoters who conducted observations during home-visits. The programme developed a communication system for discussion of monitoring results at all levels in order to improve the programme if necessary. This system consisted of regular meetings with all actors involved, including representatives of the community. In this example the community participates in execution, in data analysis and discussion (Difrete, 1992:8-15).

In the examples presented the methods to collect data consisted of a variety of participatory methods, such as mapping and observations. It is unclear whether the community participated in the preparation of the data collection and in the choice of indicators. According to the reports of the studies the community is seen as an important actor. However, no role seemed to have been created for them in the preparation of the exercise. An exception is the programme in Bangladesh, described by Vigoda. The literature review showed as well that most participatory data collection experiences in hygiene education concern mainly the process evaluation, that is monitoring of the activities. Effect evaluations executed by the local people themselves have not often been recorded.

3 ANALYSIS OF THE EFFECT EVALUATION IN BOUCLE DU MOUHOUN

3.1 ELEMENTS OF ANALYSIS

In this chapter the different elements of the effect evaluation of the hygiene education programme in Boucle du Mouhoun will be analyzed, based on study questions enumerated in 1.6 and the literature review of chapter 2. The analysis will be limited to the experiences in the pilot phase and each paragraph will treat one study question. The different elements submitted to an analysis will be discussed in the following paragraphs:

- 3.2 Evaluation design
- 3.3 Relevance of messages
- 3.4 Validity of indicators
- 3.5 Selection procedures for indicators
- 3.6 Data collection methods
- 3.7 Data analysis
- 3.8 Participation in evaluation
- 3.9 Process evaluation

3.2 EVALUATION DESIGN

Effectiveness

In 2.2 it was pointed out that the design used for the evaluation of behavioural change was a pre-test post-test design without control group. In literature it is clearly explained that this design does not give an answer to the question whether the intervention had success, because there is no comparison possible with a control group. Measuring the effectiveness of a method aims at assessing whether the method chosen gives the aspired results⁹. Theoretically speaking the chosen design was not very effective to measure behavioural change, because it does not give the opportunity to assess whether the intervention was the only element that influenced change in behaviour.

For us the pre-test post-test design was the most feasible. In our view participation of the villagers in the execution of baseline and evaluation studies was essential. We considered it unethical to execute a participatory research amongst a control group when no intervention could be executed in the village. The programme received via the VHT and the health workers many requests to expand the activities beyond the intervention villages. However, we had to gain experience with the strategy in a limited number of villages before an extension to other villages could be considered.

9 *Effectiveness is the degree to which a plan has achieved its objectives*
(Glossary ICHD 1996-1997)

Apart from that, considering the fact that participation of the villagers in research was part of our strategy the use of a control group would still not give a clear picture, because the villagers could have easily been influenced in their behaviour by collecting data on hygienic practices.

Conclusion:

Considering our guiding principle of participation and given the field situation, we can regard the chosen evaluation design as the second best choice. However, we can not be certain that only the intervention caused the results. Because of the limited number of intervention villages and the decentralized organizational structure it should be possible to follow in future whether other external influences could be responsible for changes.

Efficiency

The efficiency of a method is decided by assessing whether the method is giving the best results possible with the resources available¹⁰. In this intervention the efficiency will be analyzed with regard to the time spend on evaluation by the different actors. Time would seem an appropriate aspect to analyze considering that the VHT were important actors.

The efficiency has been assessed during a technical support mission¹¹. She mainly used the data for the first cycle, but the results can be considered as an indication of time spent on evaluation during the other cycles as well. The consultant calculated time used for process and effect evaluation at four levels: the VHT, the local health workers, the provincial health agents and the regional team (Engelkes, 1996). The details are presented in annex 3:

- A VHT used on average 2 days per cycle of four months on evaluation, that is 10% of his/her time available for hygiene education activities. The two days were used for training and data collection. However, half of this time can be considered as part of the process of awareness raising.
- Per cycle the 15 local health centres spent in total 4.3 days on evaluation. Calculations showed that this was 11% of the time that was available for hygiene education at this level, which was 30% of their working days (1.5 days per week). In cycles two and three one day was added for supervision at the start and at the end of the cycles and for retraining of the VHT. The time spent on evaluation increased therefore to 13% of the total time available for hygiene education.
- The three provincial agents used per cycle seven days per person for evaluation, which is 12% of their time available for hygiene education, that is estimated on 75% of their normal working hours (3.75 days per week).
- The regional team, consisting of three persons involved in evaluation, spent during one cycle 24.5 days on evaluation, which is 7% of their time. Activities included conception, production of material, training, analysis and report writing.

¹⁰ *Efficiency is the capacity to produce the desired result at least cost* (Glossary ICHD, 1996-1997)

¹¹ The mission was conducted by a Dutch expert on evaluation

The consultant gave the programme a norm of time to be used for evaluation of activities. This should not exceed 10% of the total time spent on the programme at all levels. Relatively speaking a reasonable amount of time was used to evaluate the activities, except for the local health workers and the provincial agents. However, because not all of the collected data were usable (see 3.3, 3.4 and 3.5), more efficient ways could have been used. The consultant proposed to conduct the effect evaluation more efficiently by using a sample of the villages at the end of a cycle. This would mean less data to analyze, a better possibility to supervise the VHT during data collection and less local health workers spending time on evaluation. This was introduced in the third cycle.

Conclusion:

The time spent on evaluation was for most actors around the norm of 10%. If the programme were to develop more efficient ways for evaluation, the health workers and the provincial agents could reduce the time spend on evaluation.

3.3 RELEVANCE OF MESSAGES

The relevance of messages is in the case of Boucle du Mouhoun related to the key-behaviours in the faecal-oral transmission of diseases and should answer the following question: "Is the content of the messages promoted in the three cycles relevant to the reduction of risk of transmission of faecal-oral diseases?"

The three cycles for drinking water concentrated on the following themes:

- Cycle 1: Water collection and transportation
- Cycle 2: Storage and taking drinking water
- Cycle 3: Maintenance of water points (promoted during group meetings) and a repetition of non-adapted messages of cycle 1 and 2 (discussed during household visits)

Measuring change in the key-behaviours is of main importance in order to be able to decide whether the behavioural change obtained will eventually contribute to a reduction of morbidity in water and sanitation-related diseases. Per cycle the messages related to the risk behaviours provoking contamination and identified during the baseline study will be compared to the behaviours mentioned by Boot and Narayan and listed in annex 1.

The messages of cycle 1: Water collection and transportation

Box 5: Comparison of messages of cycle 1 to key-behaviours in literature

KEY-BEHAVIOURS	MESSAGES OF CYCLE 1
Choice of water source	<ul style="list-style-type: none"> ● Let us take our drinking water from a pump
Water collection - types of containers - cleaning practices before filling	<ul style="list-style-type: none"> ● Let us wash our hands before fetching drinking water ● Let us wash the container before fetching drinking water
Water transportation - presence of covers and degree of exposure - contact with fingers or other objects during transport - use of stabilizing elements	<ul style="list-style-type: none"> ● Let us cover the container used for transporting drinking water ● Let us try not to touch drinking water with our hands ● Let us wash the object used to stabilize drinking water during transportation

The messages promoted in cycle 1 correspond to the key-behaviours. The programme did not select a message concerning the type of containers used, as we felt this was the responsibility of the villagers themselves. We assumed that if villagers would clean and cover their usual containers and would use the pump for drinking water, our objective would have been achieved.

The most difficult message to promote in our first hygiene education cycle appeared to be the choice of the drinking water source, which is important for influencing transmission of water borne-diseases. If this choice is not the cleanest water point but the nearest (unprotected) source, the promotion of other practices such as covering the container, becomes questionable. Although we realized that the choice of water source was the main behaviour to be influenced, all the messages were promoted as equally important. We should have differentiated the importance of the messages and should have ensured special attention to the choice of the water source during household visits.

The messages of cycle 2: Storing and taking drinking water

Box 6: Comparison of messages of cycle 2 to key-behaviours in literature

KEY-BEHAVIOURS	MESSAGES OF CYCLE 2
Water handling - contact with fingers and other objects	<ul style="list-style-type: none"> ● Let us avoid to touch drinking water when taking it from the container ● Let us wash the cup used for taking drinking water
Water storage - place of storage, access for children - coverage of containers - place of dippers	<ul style="list-style-type: none"> ● Let us store our drinking water in the house ● Let us cover the container in which our drinking water is stored ● Let us keep the cup for drinking water on the storage container
Water treatment - boiling, using filters or purification by herbs or chlorine	No messages (see below)

The messages promoted during the second cycle correspond as well to the key-behaviours listed in annex 1. However, we have not explicitly inquired whether people were treating drinking water that was drawn from an unprotected well. Neither have we specifically examined or promoted locally acceptable methods of water treatment in the household as an alternative for not collecting drinking water from the pump. The community members never mentioned the use of traditional water treatment either. We can conclude that it was a weakness in the development of our messages not to look at traditional practices for water treatment, since it appeared to be difficult to convince the community to use the pumps for drinking water. The main reason for not taking water from the pump mentioned by the villagers was the distance between the households and the pumps (Volet Education en Hygiene, 1996:1-30).

Boot and Narayan plead for water storage at a high platform to prevent access to water by children. During discussions the community in the intervention villages strongly opposed to this idea. Mothers said that children had to have access to water when the adults were not at home. In their situation it seemed more important to educate children to take water in the proper way. However, in the evaluation children were seen as a major obstacle in adoption of the message "not touching water", because parents said they could not always follow the behaviour of their children.

The messages of cycle 3: The maintenance of water points

The third cycle consisted of two separate aspects. One was aimed at community action to protect and maintain the water source. These messages were promoted during group meetings. The other one was a repetition of the least accepted messages of the first and the second cycle at household level.

Box 7: Comparison of messages of cycle 3 to key-behaviours in literature¹²

KEY-BEHAVIOURS	MESSAGES OF CYCLE 3/ GROUP MEETINGS
Water source protection and maintenance	<ul style="list-style-type: none"> ● Let us fill in the holes that contain water surrounding our water points ● Let us clean the drainage systems of our water points
Water use at the source	<ul style="list-style-type: none"> ● Let us wash our clothes at a place at a distance from the drinking water point
Other activities related to the source - prevention of water pollution exposure - prevention of ecological degradation	No messages yet

Not all the key-behaviours cited by Boot are included in the hygiene education messages on maintenance of water points. Prevention of water pollution by for instance latrine construction near the water source and prevention of ecological degradation did not emerge as problems during the baseline study. These were therefore not included in the messages. Protection of traditional water sources has not been discussed with the community or the VHT during the cycle, even though we were aware that these sources were in many intervention villages still the main water sources used. We thought that by promoting protection of traditional sources the message for using the pump would not be accepted at all.

In the messages for protection of the water source we did not only concentrate on faecal-oral transmitted diseases, the filling in of holes was aimed at attempting to reduce potential breeding places for mosquitoes. It focussed on water-related insect vector control. We included this message from the baseline study in the third cycle as it fitted best within the topic of maintenance of the water sources.

The programme has planned hygiene education on safe excreta disposal and construction of latrines in the next phase. During those cycles the importance of latrine construction away from the water points can be included in the messages.

Conclusion for the three cycles:

In general the promoted messages were relevant to the reduction in transmission of water and sanitation-related diseases, to the non-hygienic practices discovered in the region and to the key-behaviours listed by Boot and Narayan. The cycles can be considered relevant. However, we neglected the importance of the traditional well as prime water source. We should have taken this into consideration and explored with the community what could be done to protect and treat the water from these wells.

¹² The messages for the household visits have been presented in box 5 and 6.

3.4 VALIDITY OF INDICATORS

In this section we will assess for each cycle the validity of the chosen indicators. The following question will be addressed: "Do the indicators selected for effect evaluation measure behavioural change in the different key-behaviours of the transmission route?"

We will evaluate whether the indicators measured the different aspects of a specific theme promoted during a cycle. As is explained in the next paragraph, every cycle had only two or three indicators. Results based on these indicators were generalized for the other messages. We can question whether generalization of these results was correct. When different aspects are not directly interrelated we can not automatically conclude that occurrence of behavioural change in one aspect means that behavioural change has occurred in the other aspects as well. For instance during the cycle on "water collection and transportation" three aspects were promoted: the choice of the water source, water collection and water transportation. When we measure behavioural change in water collection we can not be sure that it also means that behavioural change in water transportation occurred. These aspects should be measured separately.

Indicators for cycle 1 : Water collection and transportation

Box 8: Indicators for the evaluation of cycle 1

KEY-BEHAVIOURS PROMOTED	INDICATORS CHOSEN
Choice of water source	• Number of households taking drinking water from a pump
Water collection	No indicator
Water transportation	• Number of households covering the container used for transporting drinking water

Two out of three aspects concerning water collection and transportation were measured¹³. We left out the indicator related to water collection (the messages on cleaning the container and cleaning hands). There is no indication that this aspect is strongly related to water transportation or the choice of the source. The results can therefore not be generalized to the water collection practices.

¹³ The first observation sheet contained more points for observation, which were not analyzed for evaluation purposes. They were meant as awareness raising (see example in annex 4).

Indicators for cycle 2: Storing and taking drinking water

Box 9: Indicators for the evaluation of cycle 2

KEY-BEHAVIOURS PROMOTED	INDICATORS CHOSEN
Water handling	No indicator
Water storage	<ul style="list-style-type: none"> • Number of households storing their drinking water in the house • Number of households covering the container in which drinking water is stored • Number of households that keep the cup for drinking water on top of the storage container

The three indicators chosen for evaluation of this cycle were related to water storage. No indicator was selected to measure change in the key-behaviour of water handling. The content validity of the instrument can therefore be questioned, because there is no evidence that practices in water storage are closely related to practices in water handling. To improve the validity of the indicators we should have included an indicator on water handling, especially because dirty hands touching water is an important risk factor (Boot, 1993:37-43).

Indicators for cycle 3: Maintenance of the water source

Box 10: Indicators for evaluation of cycle 3

KEY-BEHAVIOURS PROMOTED	INDICATORS CHOSEN
Water source protection and maintenance	<ul style="list-style-type: none"> • Number of water points where the holes are filled in • Number of water points that have a clean drainage system
Water use at the source	No indicator

The indicators were related to the key-behaviour of water source protection and maintenance but no indicators were related to water use at the source. This was done for a practical reason. It was difficult to observe within a limited period of time whether the majority of women washed their clothes at a distance from the water source. However, the validity of the instrument is put at stake, because water use at the source and water source maintenance are not interrelated and the results of measurement of one aspect can therefore not automatically be generalised.

During this cycle the least accepted messages of the first and the second cycle have been repeated at household level, as mentioned at the beginning of the paragraph. These messages have been evaluated by one indicator "the number of households taking drinking water from the pump", so as to limit the number of indicators for this evaluation.

Conclusion:

In all three cycles one key-behaviour of the topic that was promoted during the cycle was omitted in the evaluation as is shown in box 7, 8 and 9. In the second and third cycle several indicators were used for evaluating one kind of key-behaviour. Although the choice of indicators was based on practical reasons and therefore understandable, we cannot generalize the results of these cycles to the key-behaviours that were not evaluated. To guarantee validity of the indicators, we should include measurements of the other key-behaviours. If they are difficult to observe, we could consider to adapt the data collection methods.

3.5 SELECTION PROCEDURES FOR INDICATORS

In this paragraph the selection of indicators is reviewed. It provides an answer to the question: "What criteria have been applied in selection of indicators ?

We opted for a limited amount of indicators per cycle instead of measuring the success or failure of each message. This was done for the following reasons:

- Time constraints: data collection and analysis take a lot of time and evaluation should not be the main activity of the programme, but rather a tool to improve it.
- Only observable indicators were chosen to reduce the possibility of bias during data collection.
- It is not necessary to evaluate all the messages related to one key-behaviour when they are promoted during one cycle. The most important practices to be followed should be evaluated. Based on the results of the evaluation of these messages one should be able to generalize for the other promoted messages. In literature the same advice has been given: Pinfold (1994:272) suggests to look for simplicity of indicators by choosing one indicator for several hygienic behaviours. However, he adds as condition for using one single indicator that the different behaviours one wants to evaluate should be interrelated and should be promoted at the same time.
- A participatory evaluation should be simple to execute, because the VHT members were not used to this exercise and only 18% of the VHT members were literate in Dioula.

The selection of indicators followed for the three hygiene education cycles the same procedure:

Per cycle we identified the "objectively verifiable" variables:

- those messages that resulted in behaviours that could be directly observed,
- or those messages of behaviours of which the results could be observed, that is the physical clues, as described in 2.4.

The choice of indicators was strongly guided by this principle. If there were more than two messages "objectively observable", the message with the most important impact on reduction in transmission of the infectious agent would be chosen. However, the possibility of observation of the indicator was always the most important. Selection of

indicators was made by the regional team in collaboration with the provincial agents and representatives of the local health workers¹⁴ (see organizational structure in annex 2). The village teams have not yet been involved in the choice of indicators, even though they were the actors in the effect evaluation. After the choice had been made, they were not consulted in any way either.

Considering the suggestions of Simpson-Hébert, enumerated in 2.3, for all three cycles we have ensured that:

- The indicators were adapted to the local situation and suitable to be followed by the village teams. However, this was according to our common sense and not tested with the members of VHT before they were trained.
- The indicators were simple, easily visible and most of them did not appear as intrusive by any of the actors although this was not asked.
- There were a limited number of indicators per cycle.
- The indicators were not chosen to indicate future action to be taken.
We decided upon future actions on the basis of the findings of the evaluation.

Conclusion:

The selection of indicators was done on a practical basis, but directive and executed by the regional team and the health staff.

3.6 DATA COLLECTION METHODS

The data collection will be assessed following the five points mentioned in 2.4 which are:

- A Reliability
- B Possible bias during data collection
- C Selection, training and supervision of observers
- D Data collection procedures
- E Confounding factors

Reliability of the instrument

The indicators chosen for the evaluation of a cycle were visualized on an observation sheet, filled in by the VHT members. The visualizations were copied from the images of the series of drawings, developed for the hygiene education cycle¹⁵. Reliability of the instruments used for each cycle was not tested beforehand and a definite conclusion can therefore not be given. Practice during training for the three cycles gave a positive indication of the reliability of the observation sheets. The VHT interpreted the symbols correctly and filled out the observation sheets in the field and in the class room according

¹⁴ The evaluation procedure evolved over time. The evaluation of the first cycle was prepared by the regional team. The second and the third were more participatory and the provincial agents and representatives of the local health workers took part in the preparation.

¹⁵ The use of drawings is explained in 1.4

to the instructions and in similar ways. However, during the three cycles some sheets were not clearly filled out and thus unreadable. It is unclear whether this was because of the instrument itself, the incomprehension of certain VHT due to unclear explanation or the complexity of the data collection procedure. Examples of the observation sheets used for the three cycles are presented in annex 4.

Conclusion:

The reliability of the instruments can not be guaranteed. However, during training there was a positive indication that the sheets were understood by the different VHT in the same way.

Possible bias during data collection

During supervision and during discussions with the VHT we did not find any evidence that people changed their behaviour because of the presence of observers. Most probably the Hawthorne effect had been minimalized because the observers were part of the community, in line with the suggestion of Bentley mentioned in 2.4. The people were used to see the VHT as their neighbours, who just happened to be active in hygiene education. We think it is unlikely that the people changed their behaviour as they did not always know what the VHT were observing. For the first and the third cycle the VHT observed at the water points, where the people were asked whether they were fetching drinking water. According to experience in the field people at a traditional water point would not conceal when they were taking drinking water from the well. During the second cycle observation of physical clues (explained in 2.4) took place. The VHT entered houses on permission of the inhabitants. They did not warn the inhabitants beforehand and did not explain in detail what they were going to observe, so people did not have an opportunity to change their practices in order to make a good impression by e.g. placing a cover over their container.

The teams evaluated the behavioural changes in their own neighbourhoods. At the water source they observed at random; the people who happened to collect water at the time of observation were noted (for the first and the third cycle). During the second cycle the VHT were asked to choose at random ten households for observation. This could have created bias on the side of the observer. However, the results did not indicate this, given the wide range of different percentages calculated from the data received from the different villages (see annex 5). The health workers explained to us as well that they had an impression that the second cycle showed positive results. We have therefore reason to believe that the VHT filled out the sheets according to what in reality was observed.

Conclusion:

There was no indication of systematic bias during the data collection in any of the three cycles. The observers and the observed seemed to have been noting and acting during data collection according to reality. However, one can never be sure because this conclusion was based on reports and verbal explanation. We were not present to affirm the absence of systematic bias.

Selection, training and supervision of observers

The VHT were chosen as observers and in preparation they received a one-day training by the local health workers on data collection. Observing and filling out the observation sheets was extensively practised both in the class room and in the field. Results of these exercises were discussed with the group and mistakes of a participant were corrected and explained by other participants. This was done in order to make sure that everyone really understood the observation sheets. The health workers were instructed to organize a revision of the data collection with the VHT just before the evaluation at the end of a cycle and to supervise the final data collection. These health workers did not take part in the observations.

During the data collection of the first cycle, both at the baseline and after the intervention, training and revision were organized but there was no supervision or support from the health workers at the moment of data collection.

For the second and third cycle training, revision and supervision during the evaluation were organized in two out of three provinces. The reason for the health workers in the third province not to organize retraining or supervision might have been related to motivation of these workers¹⁶. A consequence was the difference in data collection in the provinces (see page 33).

Conclusion:

Although activities to ensure correct data collection by the VHT were organized by the programme, they were not carried out by all health workers.

Data collection procedures

Effect evaluation was implemented through structured observations. The data collection procedures were developed by the regional team, the provincial agents and representatives of the local health workers. Data collection took place during training or one week before the start of the hygiene education activities and at the end of the education cycles.

We believe that the choice of structured observations was adapted to the level of the observers. However, not all indicators could be easily observed. When the indicators were physical clues, as was the case in the second and partly the third cycle (see boxes 9 and 10), observation was simple. When the behaviour itself had to be directly observed, for instance "collecting water", it seemed more difficult. This might have been due to the instructions accompanying the data collection, as is shown in box 11.

Evaluation of the first cycle took place in all the intervention villages. Results from this data collection showed that the observation exercise had been too difficult for the VHT. Only in 23 of the 59 villages (38%) reliable data had been collected.

¹⁶ The reasons for a lack of motivation of these workers were unclear, the local health workers in the three provinces received the same incentives which were based on an agreement between the health workers, the programme and the Ministry of Health.

Box 11: Data collection procedures for the first cycle

Procedures for data collection:

- The VHT were asked to observe at the water points at moments convenient for them over a period of one week
- They received the instruction to note down each household only once
- Before marking they were supposed to ask the person collecting water whether the water would be used for drinking
- The VHT were divided over the different water points used in their neighbourhood
- In one neighbourhood at least two but sometimes three water points were frequently used
- For each different kind of water point a different colour sheet was given.
- The data collection at the start of the cycle included other aspects concerning the washing of hands and of objects for balancing the collection container, which complicated the sheet.

It was difficult to verify whether this rather complicated instruction had been followed.

In the second cycle a more simple data collection procedure was possible, because the observations took place in the households and the indicators were physical clues (see box 9). The VHT were asked to observe three physical clues (coverage of the water container, the place of the cup for taking drinking water and the place of the water container itself) in ten households in their neighbourhood. Data collection took place in all the villages. This resulted in an average of 90% of correctly filled out sheets in two provinces. In the third province only 51% of the sheets were correctly filled out. The possible reason could be inadequate revision and a lack of supervision by the health workers. Due to the fact that in the second cycle in all neighbourhoods ten households were chosen, a problem with representativeness occurred; the small villages were over-represented. For example: In a neighbourhood with 20 households 10 households represent 50% of the total, in a neighbourhood with 40 households they represent 25% of the total. As advised by Engelkes (1996) we should have chosen households according to the size of the villages.

The third cycle had two evaluation aspects: one concerning community behaviour at the water point and one for individual behaviour with respect to the choice of water source for drinking water. The first aspect followed a relatively easy procedure that consisted of the observation of physical clues at the water source (see box 10). For the second aspect the instruction of cycle 1 was repeated. The VHT were asked to observe and note down the number of households collecting water at a certain source during a period of two days. Data collection was organized in all villages at the beginning of the cycle. The data collection at the end was organized in a representative sample of all the intervention villages. On almost all the sheets the indicators concerning community behaviour were correctly marked. The observation of water collectors, however, resulted again in a high number of useless data, despite the choice of a sample of villages and a better organized supervision. We believe this is due to the difficult instructions.

Conclusion:

Simple data collection procedures are essential for correct data collection, as well as the choice of the sample size. In all three cycles we had difficulties with the development of

an appropriate procedure and we did not consult the VHT members during these preparations. This caused problems with respect to correct data collection.

Confounding factors

In general the programme did not take into account the possibility of confounding factors when measuring the effects of the hygiene education. Possible confounding factors for the measurement of the effects of the three cycles could have been:

- seasonality (cycle 1 and cycle 3)
- maturation, that is changes that take place within individuals over time but that are not due to the programme (Green, 1986). This aspect is difficult to measure.
- other educational activities of which the programme was not aware. According to our knowledge no other activities took place, but we can not guarantee that here were no radio programmes or school activities that influenced the hygienic behaviour of the community.

During the first cycle in the villages in two provinces there was a general impression that there was no increase in households taking drinking water from the pump. Seasonality was given as explanation for this by the villagers. The observations at the beginning took place in the dry season when the traditional wells contained no water. The observations at the end took place in the rainy season when the traditional wells were filled with water and households could take water from these nearby water sources.

Conclusion:

Confounding factors are important to take into consideration when comparing data. During the first cycle we could have been confronted with a confounding factor: seasonality. We did not take this into consideration when analyzing the data.

3.7 DATA ANALYSIS AND INTERPRETATION

Data analysis and results¹⁷

Data analysis with regard to the process and the effect evaluation was carried out at regional level (see 3.8). The local health workers were made responsible for the collection of the filled out observation sheets. The sheets were then channelled through to the regional level. We analyzed the sheets that were correctly filled out and compared the percentage per village of households conducting a certain behaviour at the beginning and at the end of a cycle. For the first cycle the average percentages were calculated per province. For the second and the third cycle calculation of percentage change at village level was also done. Data obtained from the process and the effect evaluation were presented on one spread sheet. Using this method links could be made between the results of the effect evaluation and the number of activities conducted in a certain village. These

¹⁷ A detailed analysis of the results has been made in the different evaluation reports. A repetition of the reasons why there is a positive indication of change for certain messages and not for others is beyond the scope of this thesis.

results were matched with the impressions of the VHT concerning the hygiene education activities and the household interviews. Following this triangulation of methods a relatively clear picture emerged of the situation.

Problems with confounding factors, data collection procedures and possible bias refrained us from conducting a statistical analysis. The data were described and interpreted as giving an indication of the effects of the programme. A summary of the findings per province as presented in the evaluation reports is given in the three boxes below. This is in order to illustrate the data analysis¹⁸. The average percentage of households per province conducting a certain behaviour was calculated by using the absolute number of households observed in all the villages within the province in which evaluation took place. This method, however, appears to be incorrect. We should have calculated the average percentage per province by using the total number of households conducting a certain behaviour in a village, and by adding these totals. In annex 5 examples of the spread sheets with detailed data of the different cycles have been presented. In the same annex an attempt has been made where possible to calculate the correct averages per province.

The first cycle: Water collection and transportation

Box 12: Results of cycle 1

Indicator 1: The number of households collecting water at the pump		
	Before the cycle	After the cycle
Province of Mouhoun	43% of the observed households	56% of the observed households
Province of Kossi	62%	42%
Province of Sourou	34%	32%
Indicator 2: The number of households that cover their water during transport		
Province of Mouhoun	26% of the observed households	57% of the observed households
Province of Kossi	20%	44%
Province of Sourou	17%	64%

The results of the first cycle indicate an increase in the use of covers during transportation of water. However, the use of the pump as source for drinking water only increased in one province. As mentioned on page 34, the main reason for not taking water from the pump was the availability of traditional wells nearby the households in the rainy season.

¹⁸ The purpose of this thesis is the analysis of the different elements of the effect evaluation. The results were only used to give an indication of the achieved effects, therefore their calculation is not analyzed and discussed in detail.

The second cycle: Water storage and taking drinking water

Box 13: Results of cycle 2

Indicator 1: The number of households that store drinking water in the house:		
	Before the cycle	After the cycle
Province of Mouhoun	89% of the observed households	96% of the observed households
Province of Kossi	79%	94%
Province of Sourou	55%	87%
Indicator 2: The number of households that cover the water container		
	Before the cycle	After the cycle
Province of Mouhoun	75% of the observed households	89% of the observed households
Province of Kossi	71%	84%
Province of Sourou	61%	79%
Indicator 3: The number of households that leave the cup for drinking on top of the container		
	Before the cycle	After the cycle
Province of Mouhoun	63% of the observed households	77% of the observed households
Province of Kossi	65%	77%
Province of Sourou	43%	70%

The data of the second cycle showed a positive indication of change in all three indicators, although "leaving the cup for drinking on top of the container" only showed a light increase. The reason for this as explained by the villagers was because of the difficulty to control the practices of the children.

The third cycle: The maintenance of water points

Box 14: The results of cycle 3

Indicator 1: The number of pumps with a clean drainage system		
	Before the cycle	After the cycle
Province of Mouhoun	25% of the total number of pumps	31% of the total number of pumps
Province of Kossi	10%	80%
Province of Sourou	25%	100%
Indicator 2: The number of pumps with filled in holes		
	Before the cycle	After the cycle
Province of Mouhoun	13% of the total number of pumps	69% of the total number of pumps
Province of Kossi	20%	70%
Province of Sourou	17%	100%
Indicator 3: The number of households collecting water at the pump		
	Before the cycle	After the cycle
Province of Mouhoun	39% of the observed households	52% of the observed households
Province of Kossi	30%	35%
Province of Sourou	42%	55%

The data collected for evaluation of the third cycle showed a positive indication of change for the three indicators, even for the use of pumps for drinking water. This gave a

positive impression.

Interpretation of data

The results and the quality of data collection were discussed by the regional teams with the health workers, who in turn discussed this per village with the VHT. For the first cycle only 38% of the villages had correctly filled out sheets (see 3.6). We extrapolated the results for these villages to the villages of which no sheets were analyzed and presented the data at provincial level. The technical support mission in 1996 agreed with us that these results were valid, but advised us to include comparison at village level, so as to be more specific when giving feed-back to the VHT. This method was used for the analysis and reporting of the data of the second and third cycle (Engelkes, 1996). This analysis enabled us to look at changes at villages level.

The first cycle was not in detail discussed, because of the time it took to analyze the data. More timely analysis allowed thorough discussion from the second cycle onwards. These discussions provoked bigger concern amongst the local health workers to ensure correct data collection during the next cycles. The health workers who had not ensured good data collection or who supervised villages with less results than the others were inclined to improve their performance in the next cycle. We did not involve the local health workers in the analysis of the data. However, from the experiences described above we can predict that making health workers responsible for analysis of data collected by the VHT (with their supervision) would have resulted in more clearly filled out sheets.

The VHT saw this discussion as a kind of competition amongst each other. A VHT who noticed not to have achieved the desired change was motivated to ensure a better result the next time. The teams themselves made suggestions for possible improvement.

Reporting of results

The evaluation reports of the three cycles presented the data per province. For the second and the third cycle the data were also presented per village. In the main text of the evaluation reports the average change in behaviour per indicator was given per province as an indication of the achieved effects. We clearly wrote that the figures presented were only an indication of what had happened in reality and we tried to explain the difference in results per province by using the answers of the interviews with the VHT and the reports of the meetings with the local health workers.

Use of the results

The question whether the results were used to adapt the hygiene education cycles is not easy to answer. The first cycle lacked an immediate follow-up. In the third cycle we introduced a repetition of the messages of cycle one and two that had not been easily accepted. However, we did not discuss with the local health workers or the VHT an introduction of new methods or arguments that could be used during the household discussion. We simply asked the VHT to repeat the same discussions as before.

Conclusion:

The data analysis was too centralized and the results were rather used to strengthen the same messages than to adapt the programme and develop new ones. Presentation of the results per village facilitates discussions on the hygiene education activities with the VHT and the health staff and motivates them to suggest ways for improvement.

3.8 PARTICIPATION OF THE VILLAGE HEALTH TEAMS

In paragraph 1.5 it was explained that the VHT and the community were to some extent regarded as owners of the programme and active participants. In order to assess how participatory the evaluation in reality has been, the different steps in the evaluation and the participation of the VHT at each step are distinguished in box 15.

Box 15: Main actors in different steps of evaluation

STEPS IN EVALUATION	MAIN ACTORS
1 Selection of indicators	- Selected by the regional team, the provincial agents and some local health workers
2 Choice of data collection	- Developed by the regional team, the provincial agents and some local health workers
3 Development of instrument	- as in 2
4 Pretest of instrument	- We used already existing drawings that had been pretested and therefore we did not see the need to test the intelligibility of the sheets. We replaced pretesting by intensive training so as to ensure that the VHT were capable of correctly <u>filling</u> out the sheets.
5 Training of observers	- The training was directive. The VHT were asked to listen and repeat the explanations of the health workers, and to do practical exercises in class and in the field so as to make sure that they understood the sheets and the data collection procedures.
6 Data collection	- This was totally in the hands of the VHT.
7 Analysis of data	- The analysis was done at regional level.
8 Feed-back and discussion	- This was organized at all levels during the training for the next cycle.

The listing in box 15 makes it clear that the VHT were neither the active participants nor the owners of the programme as we would have liked them to be, at least not with respect to the effect evaluation. We did not use the possibility to involve the VHT in the development of the procedures and the choice of the indicators. Nor did we use the training as an opportunity to discuss the data collection procedures and the observation sheets with the VHT.

Taking Narayan's characteristics (see page 19) into account we can discover several moments during the evaluation of which we can say: We collaborated with all the participants, we generated knowledge at community level, we used multiple methods (if the process evaluation is included, several methods were used to assess the successes and the failures of the programme) and we tried to be problem oriented by organizing feed-back and discussing the results. We could also argue that the instruments were locally

adapted because we used images that were developed with the community. However, at crucial moments the VHT were not consulted, that is during preparation of the evaluation and during analysis of data.

Conclusion:

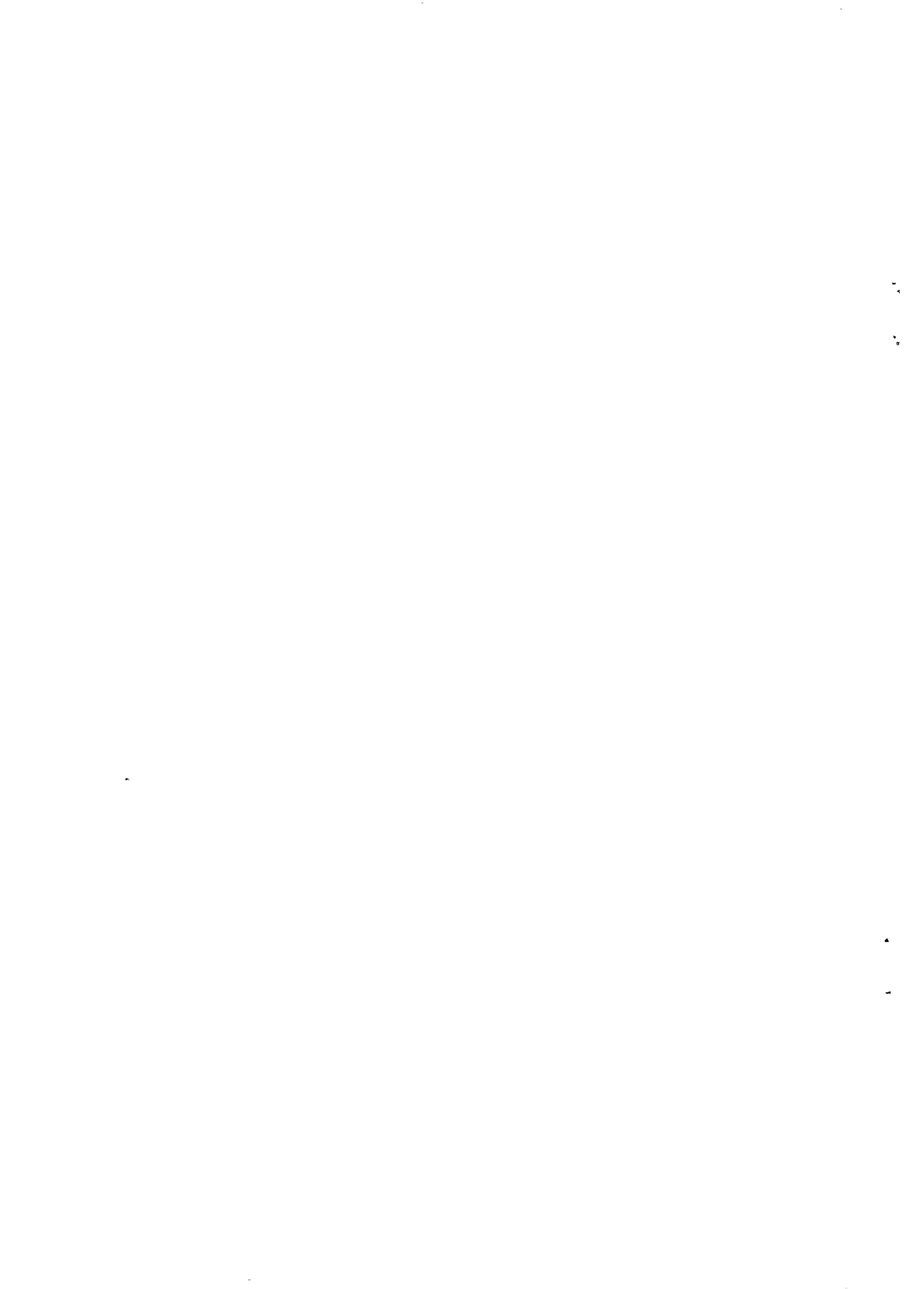
By excluding the VHT at the moment of choosing indicators, developing the instruments and analyzing the data, we denied these teams a feeling of responsibility. Therefore we cannot speak of the evaluation as an empowering instrument. The whole process was only to a limited extent participatory. Narayan gives suggestions for choosing indicators, which could serve as starting points for improvement of the participatory process of the evaluations in the future. These points will be presented in chapter 4.

3.9 THE PROCESS EVALUATION

Thus far we only discussed the effect evaluation. Because the process and the effect evaluation are interlinked, chapter three will be concluded by briefly discussing certain aspects of the process evaluation. Many aspects of the process were evaluated such as training, supervision, motivation and the role of each actor in the implementation of the programme. However, it is beyond the scope of this thesis to present all these aspects.

The assessment of the amount and quality of the hygiene education and training activities were made in a participatory way. The provincial agents, the local health workers as well as the VHT participated in preparation, implementation and discussion of the results (see 1.5). The VHT developed their own instrument for assessment of the number of activities by drawing the map of their neighbourhood during training. At the end of the cycle they were given the opportunity to discuss the strong and the weak points of the cycle and they were asked to make suggestions for improvement. The local health workers were asked the same questions. Therefore this aspect of the process evaluation can be considered as participatory.

The process evaluation had one weak point mentioned in chapter 2.5. Although we considered the social network of peers as a major agent for promoting change of behaviour at household level, we did not evaluate what happened in reality to this concept. For instance, we did not assess to what extent the VHT complied with the messages they promoted, nor did we assess whether these VHT really had an influence on the behaviour of the villagers. This is not unique for our programme. It is a general weakness of health or hygiene education programmes not to include an evaluation of the theoretical concept used for the intervention. This is due to a lack of expertise, time, financial constraints and especially the lack of a sound theoretical framework. Most programmes only evaluate behavioural change, and sometimes include measurement of a change in knowledge and/or attitude. A methodological review of 67 studies by Loevinsohn (1990:788-792) discovered that only 12% of these studies that were based on an explicit theory.



4 CONCLUSION AND RECOMMENDATIONS

4.1 CONCLUSION: A SWOT-ANALYSIS OF THE EVALUATION

This paragraph will look at the total evaluation and use a SWOT-analysis for the general conclusion. SWOT is a concept stemming from marketing and it is an abbreviation for Strengths- Weaknesses/ Opportunities- Threats. The positive and the negative aspects of the executed effect evaluation will be enumerated and potentials and difficulties in future evaluation efforts will be assessed. Based on this analysis and the conclusions of chapter three recommendations will be made.

Strengths

A strong point of the programme was that monitoring and evaluation were carried out on a continuous basis. A clearly defined system was used in which all actors were involved, including the community. The evaluation system permitted the health workers to learn how to evaluate in collaboration with the local people, which at the same time reduced costs. The data were analyzed at village level and aggregated to provincial level. The results of an evaluation were used for discussion on the successes and failures of a cycle with the actors. The quality of the evaluation was relatively good, although there were some weaknesses with respect to the participatory approach and the choice of indicators.

Weaknesses

The evaluation did not explicitly take into consideration whether the messages were addressing the public health problems and the indicators of the cycles did not refer to all the different key-behaviours that were promoted. Therefore the generalization of results of these indicators to the other messages of the cycles was not possible. The second cycle did not take a sample of households per village according to the size of the villages. The confounding factor of seasonality was not considered.

The main weakness of the evaluation method was the lack of participation of the VHT in the choice of indicators, the development of the collection procedure and in the analysis.

Opportunities

The programme offers sufficient opportunities to address the weaknesses of the evaluation, because of the concept of participation which underlies the implementation. However, this concept needs to be more operationalized. Different responsibilities need to be more decentralized, such as data analysis and preparation of the evaluation. The expansion of the programme to other villages will be an excellent opportunity for decentralization, because the attention of the regional team has to be divided over more villages.

Because of the existing network of VHT established through the programme there is potential at village level to address different health problems relevant to the specific situation in villages with the help of these teams.

Recently the Ministry of Health has decentralized the health structures and implemented the Initiative of Bamako in Boucle du Mouhoun. This included the establishment of a community based management system of the local health centres. At village level the VHT could be integrated into this structure for health.

Threats

Burkina Faso has had experiences with voluntary health workers at village level for over ten years. To date most of these volunteers have stopped their work in the village, most probably because of a lack of supervision and motivation. This resulted in a general opinion amongst the health workers that recruiting volunteers for activities at village level is not feasible in the long run. This point of view risks to become a self-fulfilling prophecy, because these health workers do not stimulate the VHT in their activities, but rather motivate them not to accept voluntary work. At national level there is no priority for community based health care and health education activities. No resources are therefore available for development of new activities to sustain the existing networks when the foreign funding will end. A possible solution could be the development of a system for motivation of the VHT at village level.

Another threat is the future existence of the regional team. In May 1998 the rural water project will end. The teams at village level can be integrated in other structures, as mentioned above. The water and sanitation activities of the local health workers and the provincial agents are already part of their daily work. However, the continuation of support in health related activities at village level by a regional team with expertise on participatory methods is not certain. This endangers the integration of these participatory methods into the activities of the health workers in the future.

4.2 RECOMMENDATIONS

This paragraph of the thesis is specifically addressed to the regional team, the health workers and the VHT in Boucle du Mouhoun. Practical suggestions for improvement of the effect evaluation will be made. They are presented according to the different points enumerated in chapter three.

Relevance of the messages

We should look at hygiene behaviour in a structured way and as a continuous process by following the morbidity patterns as reported by the health centres in the intervention area, the key-behaviours mentioned in literature and the practices discovered in the baseline study. In this way we will be able to follow whether our intervention is still relevant. We need to be more flexible towards the field situation. This would allow us to better adapt the messages and the methods to what is locally feasible, in order to enable the local people to draw their own conclusions and set up their own action plan.

For instance: we could develop a cycle during which the communities in the different villages analyze their own situation with respect to available water sources. Based on this

analysis they could discuss amongst themselves and with the VHT the positive and negative points of the different water sources and set up an action plan to protect water points. This would imply the development of a training on the use of participatory methods that would enable the local health workers and the VHT to carry out different activities in different villages.

Validity of indicators

We should not only look at the fact whether the indicators are objectively verifiable but we should give priority to measuring all the different key-behaviours and choose if possible only one indicator per key-behaviour. This would mean that other data collection methods should be chosen as well, for example demonstration of a certain practice. This would be possible by using a sample of the villages and by choosing and preparing this method together with the local health workers and the VHT.

Selection of indicators

The choice of the indicators should have been done with the VHT. Narayan describes different points to take into consideration when choosing indicators and instruments in collaboration with the community. These points are shown in box 16 (Narayan, 1992:22-24).

Box 16: Points for choosing indicators and instruments

- Different communities may find different indicators of greater importance
- In the same community the relative importance of different indicators may vary over time
- Gender differences can influence the chosen indicators of success
- Indicators of success may differ for the community, their leaders and the staff of the programme
- Communities have the ability to develop, select, monitor and evaluate which indicators are of importance to them
- Capacity building at individual level, community and institutional level, is more likely to occur if it is a specific objective and indicator of success
- When objectives are clearly stated and highly specific, it is easier to develop indicators to monitor and evaluate their achievement
- To succeed, participatory evaluation requires the active support of managers.

By carefully preparing the choice of indicators and taking the above mentioned points into consideration, the choosing of indicators would become a joint decision.

Participation in data collection methods and instruments

As mentioned in chapter three, the participation of the VHT in the preparation of the evaluation is essential. We could discuss in our team and with some health workers beforehand which key-behaviours should be measured. These ideas would then be discussed with some VHT and the data collection procedures could be developed with this group. It would require more time, but enable the VHT to look upon the whole process as partly their responsibility and therefore ensure more success. In this way we would be able to call the evaluation a tool for empowerment. It would allow a better data collection as well.

We also should pretest our observation sheets. We further need to ensure that training concerning the evaluation methods remains participatory and that the procedures and sheets are critically discussed with the VHT during the training. It will allow the VHT to be more responsible for their own evaluations and therefore will result most probably in more readable and correctly filled out data sheets.

Data analysis and interpretation

We should decentralize data analysis to the local health workers and make the provincial agents responsible to ensure correct data analysis. During our discussion with the health workers we noticed that it motivated them to discuss and understand what happened with the data. In preparation for this task we should organize a simple training on the method and reporting of data analysis. A uniform reporting system is important because the results will have to be communicated to the regional and the national level. This means that the central collection point would remain at the regional level, but this team would have tasks with respect to training, coordination, summarizing and comparison of data.

The process evaluation

In order to see whether the VHT influence hygiene behaviour of the villagers we should find out whether the VHT members themselves conduct the practices they promote. We need to ask questions at household level or in group discussion with the villagers, in order to find out if the VHT are of real influence. We need to develop a strategy for this evaluation, so as to ensure that no parts of the concept of peer education are omitted.

REFERENCES

- Almedon, A. and Chatterjee, A. Indicators for sanitation- yardsticks for cleanliness? *Waterlines*, 1995; volume 13 no.3:6-9.
- Bentley, M.E. et al, 1994, *The use of structured observations in the study of health behaviour*, The Hague, IRC, 58p.
- Bons, A., 1993, *Rapport final de l'assistance technique au service animation du Projet Hydraulique Villageoise de la Boucle du Mouhoun*, Dédougou, Projet Hydraulique Villageoise de la Boucle du Mouhoun (PHVBDM), 50p.
- Boot, M.T. and Cairncross, S., 1993, *Actions Speak: the study of hygiene behaviour in water and sanitation projects*, The Hague, IRC, 152p.
- Bracht, N., 1990, *Health promotion at the community level*, London, Sage Publications, 320p.
- Cairncross, S. and Kochar, V., 1994, *Studying Hygiene Behaviour*, New Delhi, Sage Publications India, 334p.
- Difrete Browne L. and Hurtado E., 1992, *Development of a behaviour-based monitoring system for the health education component of the rural water and health project, Care Guatemala*, Washington, Water and Sanitation for Health Project (WASH), 97p.
- Engelkes, E., 1995, *Rapport sur le système de suivi*, Diever, Interhealth, 50p.
- Engelkes, E., 1996, *Rapport sur la deuxième mission d'appui au développement et l'évaluation du système de suivi/appui*, Diever, Interhealth, 25p.
- Feuerstein, M., 1986, *Partners in Evaluation: evaluating development and community programmes with participants*, London, Macmillan Publishers, 196p.
- Glanz, K. et al, 1990, *Health behaviour and health education: theory research and practice*, San Francisco, Jossey-Bass Publishers, 460p.
- Green, L.W. and Lewis, F. M., 1986, *Measurement and evaluation in health education and promotion*, Palo Alto California, Mayfield Publishing Company, 411p.
- GTZ, 1989, *Community Participation and Hygiene Education in Water Supply and Sanitation*, Eschborn, GTZ, 115p.
- Hope, A., Timmel, S. and Hodzi, C., 1984, *Training for transformation Book 2*, Gweru, Mambo Press, 131 p.

Institut National de la Statistique, 1994, *Enquête Démographique et de Santé Burkina Faso 1993*, Ouagadougou, INSD, 296p.

Kumary, A. et all, 1996, *Kerala Hygiene Evaluation Study*, Kerala, Socio-Economic Unit, 54p.

Loevinsohn, B.P., Health education interventions in developing countries: A methodological review of published articles. *International Journal of Epidemiology*, 1990; vol.19 no.4:788-792.

Marsden, D., Oakley, P., 1994, *Measuring the Process: Guidelines for Evaluating Social Development*, Oxford, Intrac, 177p.

Martinès, J. and Simpson-Hébert, M., 1993, *Improving Water and Sanitation behaviours*, Geneva, World Health Organization, 20p.

Narayan, D., 1993, *Participatory Evaluation: Tools for Managing Change in Water and Sanitation*, Washington, Worldbank, 122p.

Projet d'Hydraulique Villageoise de la Boucle du Mouhoun, 1994, *Plan d'Opérations Tome II, Education en Hygiène*, Dédougou, PHVBdM, 50p.

Projet d'Hydraulique Villageoise de la Boucle du Mouhoun, 1994, *Document d'Exécution PHVBdM, Phase IV*, Dédougou, PHVBdM, 70p.

Projet d'Hydraulique Villageoise de la Boucle du Mouhoun (PHVBdM), 1995, *A la découverte de l'hygiène de l'eau, étude du milieu*, Dédougou, PHVBdM, 60p.

Projet d'Hydraulique Villageoise de la Boucle du Mouhoun (PHVBdM), 1996, *Rapport d'évaluation du cycle 1 du Volet Education en Hygiène*, Dédougou, PHVBdM, 38p.

Projet d'Hydraulique Villageoise de la Boucle du Mouhoun (PHVBdM), 1996, *Rapport d'évaluation du cycle 2 du Volet Education en Hygiène*, Dédougou, PHVBdM, 48p.

Rugh, J., 1986, *Self-evaluation: ideas for participatory evaluation of rural community development projects*, Oklahoma, World Neighbours, 42p.

Srinivasan, L., 1990, *Tools for Community Participation*, New York, PROWESS/UNDP, 179 p.

Université Agronomique Wageningen, 1994, *Profil Environnemental du Burkina Faso*, Wageningen, 63p.

References

Varkevisser, C. M., Pathmanathan, I., Brownlee, A., 1991, *Designing and Conducting Health Systems Research Projects: Part I*, Ottawa, International Development Research Centre, 376p.

Vigoda, M., 1994, Participatory Rural Appraisal in a Women's Health Education Project in Bangladesh, *RRA Notes*, 1994:vol.19:70-75.

van Wijk, C. and Murre, T., 1995, *Motivating Better Hygiene Behaviour: Importance for Public Health Mechanisms of Change*, New York, UNICEF, 45p.

Winblad, U. and Simpson-Hébert M., 1993, *New Directions for Hygiene and Sanitation Promotion: the findings of a regional informal consultation*, New Delhi, World Health Organization Regional Office for South-East Asia, 13p.

World Bank, 1993, *World development report*, New York, Oxford University Press, 329p.



ANNEXES



ANNEX 1

KEY-BEHAVIOURS FOR PREVENTION OF WATER AND SANITATION-RELATED
DISEASES

Overview of key-behaviours in the different areas presented by Boot. For the areas chosen in Boucle du Mouhoun the details have been mentioned and further specifications are added as proposed by Narayan. For the other areas, only the main topics have been presented.

Key-behaviours by Boot (Actions speak, 1993:36) Specification by Narayan
(Participatory evaluation, 1993:79-84)

A: DISPOSAL OF HUMAN FAECES

Choice of place for defecation
Disposal of faeces
Anal cleansing
Disposal of cleansing material
Hand washing cleaning of the toilet/latrine
Maintenance of the toilet/latrine
Other activities related to faecal matter:
use of faeces as fertilizer or for fish production,
animals eating faeces

B: USE AND PROTECTION OF WATER SOURCES

1 Choice of water sources

2 Water collection

2a: Type of containers and ladles
b: Condition of containers (cleanliness)
c: Contact with hands and other objects

3 Water transport

3a: Presence of covers and degree of exposure

4 Water use at the source

5 Wastewater disposal and drainage

6 Water treatment

7 Water source protection and maintenance

8 Other activities related to water source:
water conservation by prevention of water
pollution or by prevention of ecological
degradation

C: WATER AND PERSONAL HYGIENE

Water hygiene in the home:

1 Water handling

1a: Contact with hands and other objects

2 Water storage

2a: Presence of covers, degree of exposure
b: Place of storage, including child/animal access

3 Water treatment

3a: sedimentation/filtration, chemical treatment,
heating and boiling

4 Water re-use

5 Wastewater disposal

Personal hygiene:

Washing of hands/ cleaning of nails

Washing of face

Body wash/bathing

Hygiene after defecation

Washing and use of clothes, towels and bedding

Personal hygiene during natural events, such as menstruation, birth, death, illness

D: FOOD HYGIENE

Handling practices

Preparation practices

Storage practices

Eating and feeding practices

E: DOMESTIC AND ENVIRONMENTAL HYGIENE

Household hygiene, such as:

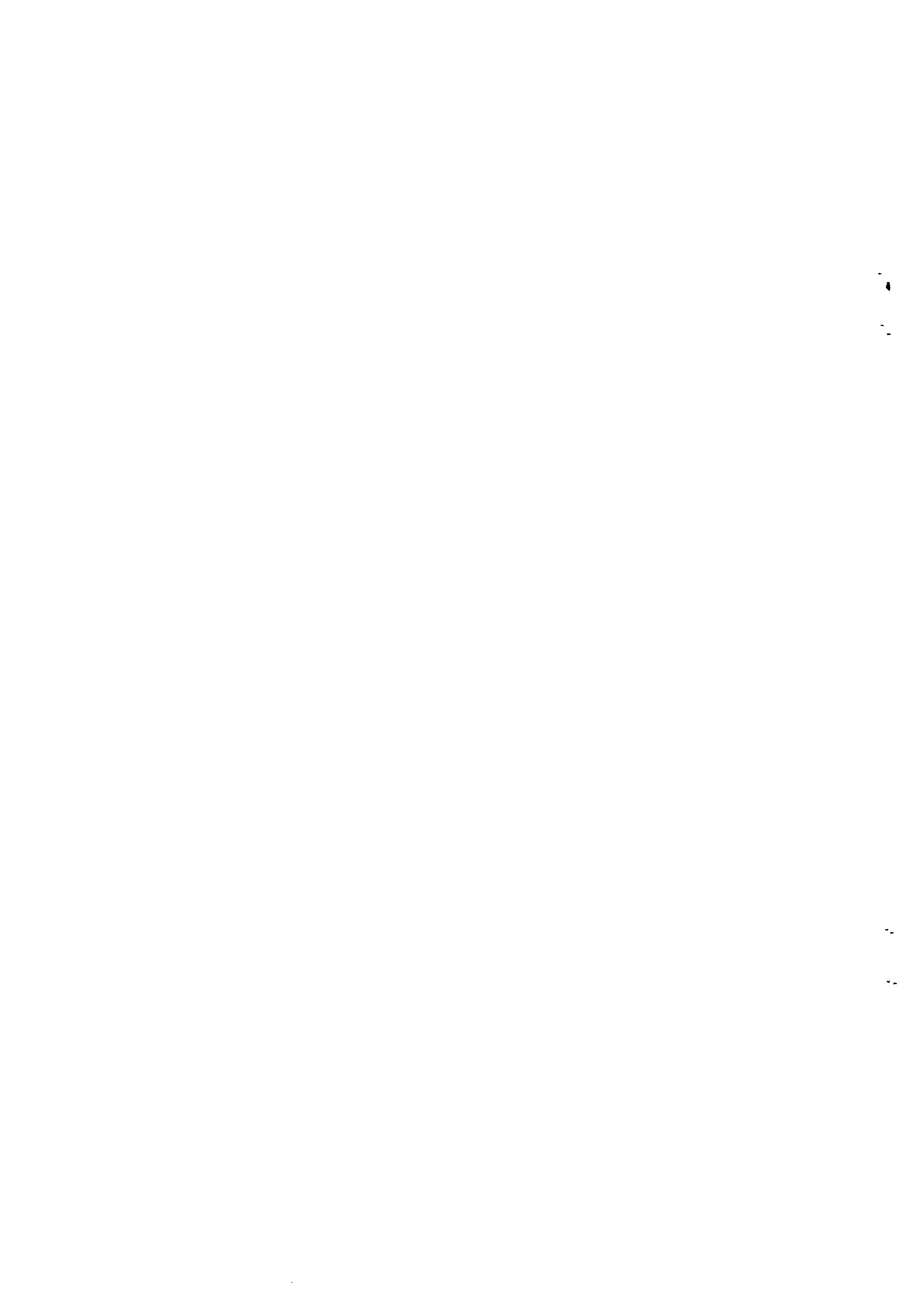
sweeping and cleaning and insect control

Environmental hygiene, such as:

solid waste disposal, drainage and street cleanliness

Animal management, such as:

safe disposal of animal faeces and control/coralling of animals



ANNEX 2

COMPOSITION AND ORGANIZATIONAL STRUCTURE FOR FIELD ACTIVITIES

Composition of different teams within the hygiene education programme

Regional level

For execution of the programme the "Project Hydraulique Villageoise" recruited at regional level three people: a trainer, a communicator and a technical assistant. They formed the HE-team (Hygiene Education team) and they were associated with the already existing CRESA (Centre Régional d'Education pour la Santé et l'Assainissement). The CRESA and the HE-team formed the regional team. The HE-team worked full time for the hygiene education intervention, the CRESA spent 50% of its time on the programme.

Provincial level

In the three provinces a provincial agent (SIECA) existed. The SIECA (Service d'Information, d'Education, de Communication et d'Assainissement) was responsible for Health Education and Sanitation. He was for 75% of his working time available for the hygiene education programme and covered in his province five health centres and 20 villages that were involved in the hygiene education programme.

Local health centre

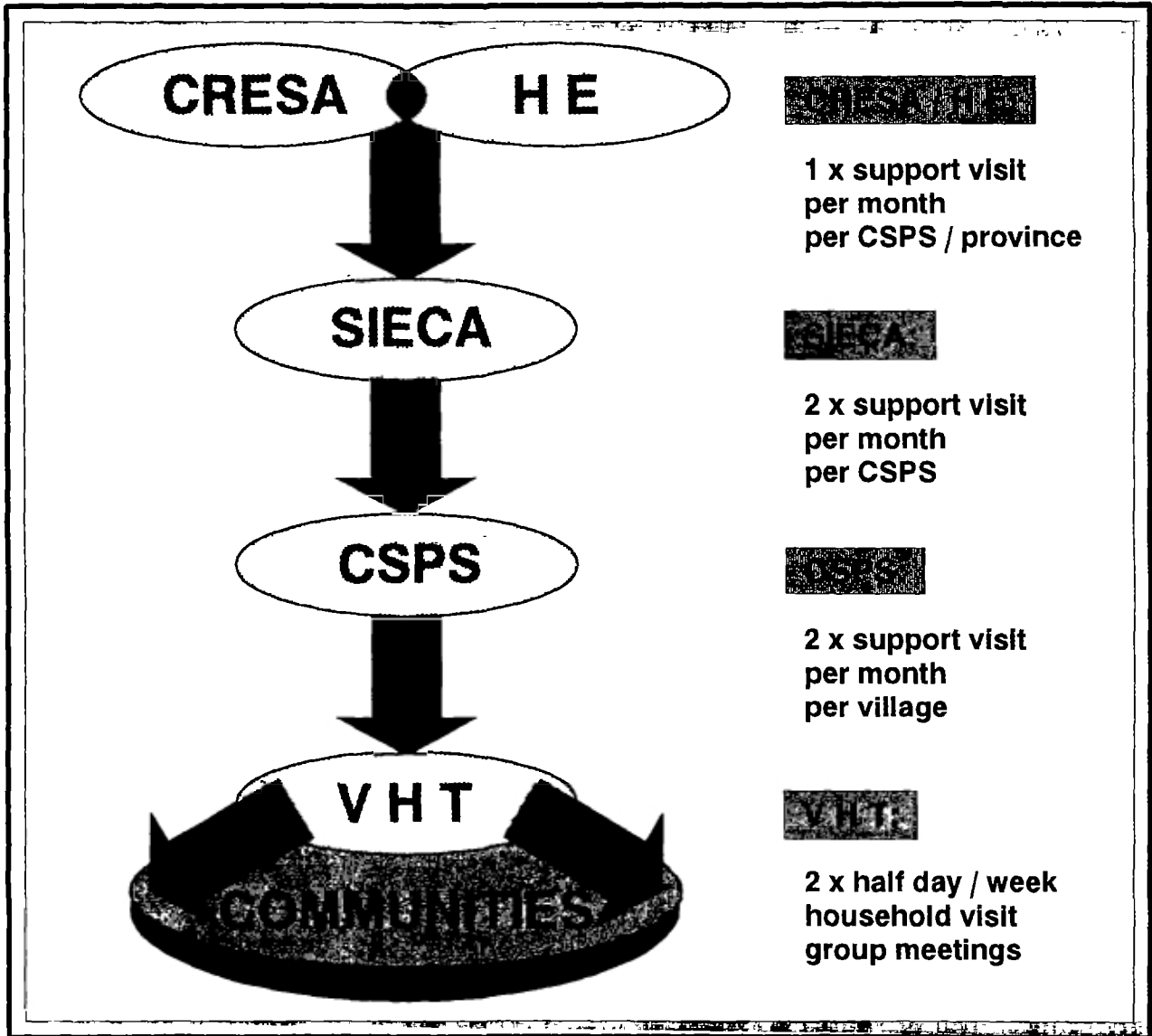
In every province five local health centres (CSPS, Centre de Santé et de Promotion Sociale) were chosen by the programme and the provincial directors of health to participate in the hygiene education programme. In each centre two people were trained to train and supervise four villages in the implementation of the hygiene education programme. A local health centre was for 30% of the working time available for the hygiene education programme, which is 1.5 days per week.

Village level

In every province 20 villages were chosen, four villages per local health centre. In every neighbourhood of each village a man and a woman were chosen by the inhabitants of the neighbourhood for the execution of the hygiene education programme. They spent voluntarily one day per week on hygiene education activities.

The organizational structure in the field is shown on the next page.

The organizational structure of the hygiene education programme in the field



ANNEX 3

CALCULATIONS ON TIME SPENT ON EVALUATION

Village Hygiene Team

Every member was supposed to spend one day per week during one cycle on hygiene education, and five days per cycle on training.

Of these days two days per cycle were spent on evaluation:

Training: 1 day per member

Execution: 1 day per member

In total every member spent per cycle:

$(4 \text{ months} \times 4 \text{ weeks} \times 1 \text{ day}) + 5 \text{ days on training} = 21 \text{ days.}$

The two days on evaluation were 9,5% (appr. 10%) of the total amount of time reserved for hygiene education activities.

Local health workers

Every health centre involved in the programme was to spend 30% of the time available for one person on hygiene education, which is 1.5 days per week. On request of the Ministry of health and the health workers themselves, the 1.5 days were divided over two persons. Apart from that the two persons spent in total 6 days per cycle on a training for trainers and 10 days for training of the VHT. (For convenience reasons we will calculate the time during the cycle as if it were one person carrying out hygiene education). One cycle is four months, which means during that during one cycle:

$(4 \text{ months} \times 4 \text{ weeks} \times 1.5 \text{ days}) + 6 \text{ days} + 10 \text{ days} = 40 \text{ days}$

The 15 local health centres used 65 man days on evaluating the cycles, which is 4.3 man days per centre.

The 4.3 days on evaluation were 10,7% (appr. 11%) of the total amount of time available for hygiene education.

Most of the time for evaluation (75%) was dedicated to the process evaluation. In cycles two and three 1.5 days were added for supervision at the start and at the end of the cycles and retraining of the VHT.

75% of process evaluation. This took 3.3 days: one day training on map drawing, one day data collection at household level and 1.3 days supervision of VHT and meetings with the VHT.

For the effect evaluation only 25% was used: one day training of VHT per cycle.

The provincial agents

During the pilot phase the region had three provinces. The Ministry of Health had in each province a provincial department. One of the personnel members of that department was the provincial agent: SIECA (Service d'Information, d'Education, de Communication et d'Assainissement). This person was responsible for the IEC and sanitation activities in the province. He had 75% of his time available for hygiene education, which meant 3.75 days per week. In a cycle of 4 months he spent 60 days on hygiene education.

On evaluation he spent per cycle:

1 day training of local health workers

1 day supervision of training of VHT on data collection

5 days for supervision and evaluation activities during the cycle

This meant a total of 7 days per cycle on evaluation, and 12% of the total time available for hygiene education.

The regional team

The regional team consisted of three people (one trainer, one communicator and one technical assistant). They worked full time for the hygiene education programme, which means 660 working days per year (Considering that there are two cycles per year and 220 working days per person, which is 660 man days for the whole team).

The team spent on evaluation¹⁹ per cycle:

Preparation: 7 days

Training: 4.5 days

Supervision: 4 days

Analysis: 4 days

Reporting: 5 days

Total: 24.5 days

Yearly two cycles are executed, which is 49 days, this is 7,4% (appr. 7%) of the total time available for hygiene education at regional level.

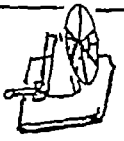









¹⁹ This is time spent on regular evaluation activities and excludes 15 man days the regional team spent for the internal evaluation and for the technical support mission.

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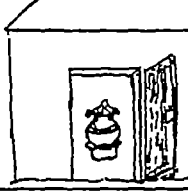







ANNEX 4

EXAMPLES OF OBSERVATION SHEETS

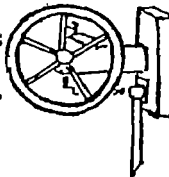
				
				
				
				
				
				
TOTAL =				

Cycle 1

Cycle 2

				
				
				
				
				
TOTAL				

Cycle 3

					
AVEC					

NON

ABREUVOIR: Oui

AVEC

TOTAL

ANNEX 5

EXAMPLES OF SPREADS SHEET FOR EVALUATION DATA

EVALUATION DU CYCLE 1 DU FEVRIER - JUIN 1995/ PROVINCE DE LA KOSSI
CHANGEMENT DU COMPORTEMENT

Nom village	CSPS	FORAGE				PUITS TRADITIONNEL				PUITS A GRAND DIAMETRE			
		Recipient couvert		Recipient non couv		Recipient couvert		Recipient non couv		Recipient couvert		Recipient non couv	
		debut	fin	debut	fin	debut	fin	debut	fin	debut	fin	debut	fin
Tebere	Bourasso	1	45	38	14	0	0	0	0	6	44	27	46
Kodougou Bo	Bourasso	15	25	33	10	7	16	14	14	0	0	6	0
Nokuy B	Bourasso	20	49	54	19	7	54	58	34	0	0	0	0
Toni	Toni	28	72	275	92	0	0	48	54	5	57	42	72
Kamandena	Toni	1	42	43	7	4	34	44	33	0	21	20	38
Sadnga	Bomborok	72	14	76	46	0	3	3	7	0	0	0	0
Kamlankoro	Bagala	11	39	33	48	15	23	44	185	25	54	41	44
Koro	Koro	3	42	4	46	4	3	7	5	1	9	2	9
Total		151	328	556	282	37	133	218	332	37	185	138	209
%		21	54	79	46	15	29	85	71	21	47	79	53

En resume:

Au debut du cycle on a vu 1137 personnes, qui puisaient de l'eau de boisson, dont 80% dans des recipients non couverts et 20% dans des recipients couverts

A la fin du cycle on a vu 1469 personnes, qui puisaient l'eau de boisson, dont 56% dans des recipients non couverts et 44% dans des recipients couverts.

On a vu aux points d'eau le nombre suivant de personnes pour puiser l'eau de boisson.

	Nbre points d'eau		Nbre personnes				Recipient couvert	Debut	%	Fin	%
		%	debut	%	fin	%					
Forage	10	36	707	62	610	42	151	21	328	54	
Puits traditionnel	10	36	255	22	465	32	37	15	133	29	
Puits a grand diametre	8	28	175	15	394	27	37	21	185	47	
Total							225	20	646	44	

EVALUATION DU CYCLE 2/ KOSSI

NOVEMBRE 1995- JANVIER 1996

CSPS	Village	nbre mén	mén/for	ME for	mén /EQ	ME fonc.	nbre visites		nbre rdq	hom	fem	appui			Total obs		Indicateur 1			Indicateur 2			Indicateur 3			
							1	2				CSP	SIEC	EH	deb	fin	deb	fin	cha	deb	fin	cha	deb	fin	cha	
							%	%				%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Bouras	Bourasso	306	153	8	77	8	166	157	8	74	92	3	0		39	40	72	100	18	51	90	39	51	90	39	
	Koud.Bobo	39	39	8	10	7	39	39	8	41	40	3	0		6	33	100	100	0	100	100	0	100	91	-9	
	Nokuy Bob	35	35	8	8	8	35	35	8	52	54	2	0		30	24	63	100	37	47	100	53	67	100	33	
	Tebere	77	77	8	19	8	77	76	8	64	63	2	0		41	40	83	100	17	76	95	19	76	88	12	
Bombo	Borekuy	85	xx	6	28	6	79	70	7	62	55	2	0		xx	30	xx	90	xx	xx	60	xx	xx	60	xx	
	Gombele	78	78	8	20	6	56	45	7	23	41	3	1		30	30	80	100	20	33	83	50	60	63	3	
	Sadinga	79	xx	6	26	6	48	11	5	26	66	3	0		26	30	62	100	38	54	80	26	42	93	51	
	Tirakuy	80	xx	8	20	8	28	7	8	28	100	1	0		33	39	79	100	21	48	79	31	70	69	-1	
Bagala	Kamiankor	167	167	9	37	8	167	167	8	83	97	2	1		23	40	74	85	11	83	75	-8	61	68	7	
	Kerena	77	xx	8	19	8	77	76	7	35	44	2	1		44	40	89	100	11	73	90	17	68	90	22	
	Sikoro	78	xx	8	20	7	78	75	5	6	66	2	2		30	40	83	90	7	80	83	3	73	90	17	
Koro	Koury	86	86	8	22	7	86	86	8	57	81	0	2		41	40	61	100	39	76	83	7	54	68	14	
	Koro	200	100	10	40	10	202	189	9	124	117	4	0		40	50	85	100	15	85	90	5	68	78	10	
	Seriba	88	88	8	22	8	62	26	1	20	0	3	0		44	20	89	100	11	91	85	-6	80	70	-10	
	Tissi	88	88	9	20	9	88	88	5	45	50	4	1		47	50	66	100	34	91	88	-3	62	70	8	
Toni	Kamanden	184	92	8	46	8	184	94	7	38	79	5	1		xx	40	xx	78	xx	xx	78	xx	xx	68	xx	
	Kemena	384	384	8	96	8	384	384	4	0	4	4	1		42	40	90	65	-25	62	83	21	59	75	16	
	Pa	105	105	8	26	8	105	105	8	51	53	2	1		32	40	78	95	17	91	73	-18	59	58	-1	
	Toni	273	137	10	55	10	240	240	7	37	68	5	0		43	50	90	84	-6	67	74	7	47	64	17	
Total		2509		154		148	2201	1970				52	11		591	716										

96% 88% 78.5% 44% 35%

NB1 Les visites d'appui prises en compte dans l'évaluation sont des visites pendant lesquelles l'agent a appuyé une visite à domicile ou une réunion de quartier,

Cycle 2/ Province of Kossi

EXPLANATION OF ABBREVIATIONS/ SPREADSHEET WITH EVALUATION DATA OF THE SECOND CYCLE

Per column:

CSPS	-	Local Health Centre
Village	-	Village
nbre mén	-	Number of households in the village
mén/for	-	Number of households per pump
ME for	-	Number of VHT members trained
mén/EQ	-	Number of households per team in a neighbourhood
ME fonc	-	Number of VHT members still active after the cycle
Nbre visites 1	-	Number of households that received the first visit
Nbre visites 2	-	Number of household that received the second visit
Nbre rdq	-	Number of group meetings organized
hom	-	Number of men that attended the group meetings
fem	-	Number of women that attended the group meetings
appui CSP	-	Number of support visits executed by the local health workers
appui SIEC	-	Number of support visits executed by the provincial agent
appui EH	-	Number of support visits executed by the regional team
Total obs deb	-	Total number of households observed at the beginning
Total obs fin	-	Total number of households observed at the end
Indicateur 1 deb %	-	% of observed households at the start of the cycle, practising the message related to the first indicator: Storing your drinking water in the house
Indicateur 1 fin %	-	% of observed households at the end of the cycle, practising the same message
Indicateur 1 cha %	-	% change of indicator 1 (= %fin- % deb)
Indicateur 2 deb %	-	% of observed households at the start of the cycle, practising the message related to the second indicator: Covering the container for storing drinking water
Indicateur 2 fin %	-	% of observed households at the end of the cycle, practising the same message
Indicateur 2 cha %	-	% change of indicator 2 (= %fin- % deb)
Indicateur 3 deb %	-	% of observed households at the start of the cycle, practising the message related to the third indicator: Keeping the cup for taking drinking water at the top of the storage container
Indicateur 3 fin %	-	% of observed households at the end of the cycle, practising the same message
Indicateur 3 cha %	-	% change of indicator 3(= %fin- % deb)

EVALUATION CYCLE 3/ BOUCLE DU MOUHOUN

FEVRIER- JUIN 1996

Province	CSPS	Village	Nbre			Nbre MEV			Reunlon			Ind 1			Ind 2		Ind 3				diff					
			men	for	q	men	form	fonc	men	Nbr	Nbr	Nbr	Nbre	for	Lave	fin	Trou	deb	fin	Puisage au forage						
			men	for	q	/for	form	fonc	/eq	vad	Prev	Real.	h	f	abr	deb	fin	deb	fin	obs	deb	%	obs	fin	%	%
Sourou	Blba	Boh	125	1	4	125	8	8	31	125	16	8	54	41	1	0	1	0	1	127	25	20	30	10	33	13
		Lah	52	1	4	52	8	8	13	52	16	8	46	29	1	0	1	0	1	57	23	40	28	1	4	-36
		Siena	178	4	5	45	8	8	36	178	20	11	80	58	3	2	3	0	3	100	39	39	108	53	49	10
	DI	Oue	498	1	6	498	12	12	83	498	8	2	91	52	1	0	1	0	1	132	19	14	65	20	31	17
		Benkadi	115	3	4	38	8	7	29	115	12	3	82	100	0	0	0	0	2	61	61	100	39	39	100	0
	Kassou	Bourgou	56	1	4	56	8	8	14	56	16	8	56	44	1	1	1	0	1	48	31	65	17	9	53	-12
		Tani	23	1	2	23	4	4	12	23	8	6	44	60	1	0	1	0	1	15	15	100	16	16	100	0
	Yaba	Paanam	45	1	4	45	8	8	11	135	4	3	69	72	1	0	0	0	1	101	36	36	34	34	100	0
		Tosson	89	4	4	22	8	8	22	89	4	4	183	140	3	0	3	0	3	54	44	81	61	37	61	-20
Total Sourou			1181	16	37	58	72	71	32	1271	104	53	705	596	12	3	12	2	14	695	293	42	398	219	55	13
Kossi	Bomb	Gombele	89	1	4	89	7	7	22	49	16	12	42	60	1	0	1	0	1	40	10	25	39	9	23	-2
	Bourass	Bourasso	319	2	4	160	12	12	80	284	8	6	112	189	2	0	2	1	2	156	66	42	156	78	50	8
		Kodoug.	34	1	4	34	8	8	9	34	4	3	38	53	1	0	1	0	1	36	12	33	29	9	31	-2
		Nokuy B	31	1	4	31	8	7	8	31	4	4	79	98	1	0	1	1	1	49	34	87	56	38	68	-19
	Koro	Koro	305	2	5	153	16	16	61	305	8	6	31	102	2	1	1	0	0	59	6	10	118	17	14	4
		Koury	92	1	4	92	8	8	23	92	4	3	25	27	1	0	1	0	0	60	16	27	59	21	36	9
	Toni	Kamand	184	1	4	184	8	8	46	280	16	12	250	276	1	0	0	0	1	114	29	25	60	10	17	-8
		Kemana	413	1	4	413	8	8	103	413	16	12	150	404	1	0	1	0	1	172	35	20	30	10	33	13
Total Kossi			1467	10	33	118	75	74	39	1488	78	68	727	1209	10	1	8	2	7	686	208	30	547	192	35	5
Mouhou	Bondoku	Tia	149	1	3	149	6	6	50	104	4	0	0	0	1	0	0	0	1	129	46	36	92	51	55	19
		Moukoun	98	2	4	49	8	8	25	96	8	2	33	12	1	0	0	0	2	114	39	34	49	27	55	21
	Fakena	Fakena	397	4	5	99	16	16	79	196	16	5	44	83	3	0	0	0	1	126	7	6	53	42	79	73
		Fouankuy	106	1	5	106	10	10	21	66	4	2	14	22	1	0	0	0	0	26	23	88	28	23	82	-6
	Nounou	Makongo	395	2	4	198	8	8	100	373	8	4	39	107	2	2	2	0	2	148	117	79	24	19	79	0
		Sokoula	82	1	3	82	6	6	27	82	4	2	35	56	1	1	1	0	1	77	34	44	17	9	53	9
	Ouri	Seyou	97	1	3	97	8	8	24	92	4	2	84	130	1	1	1	0	1	36	36	100	33	17	52	-48
		Ouri	211	3	8	70	12	12	26	207	20	15	321	406	3	0	1	0	1	209	53	25	100	40	25	0
	Soukuy	Soukuy	209	2	6	105	12	12	35	203	8	6	84	105	2	0	0	1	1	130	47	36	123	57	46	10
		Tora	64	1	2	64	3	3	43	62	4	3	67	91	1	0	0	1	1	57	11	19	53	11	21	2
Total Mouhou			1808	18	43	57	89	89	41	1481	80	41	721	1012	16	4	5	2	11	1052	413	39	572	296	52	13
Total 3 provinces			4456	44	113	101	236	234	38	4240	260	152	2153	2817	38	7	25	4	32	2433	914	38	1517	707	47	9

NB : Dans la province de la Kossi, les donnees sur le nombre de menages a Kamandena ont ete prises des donnees du cycle 2

Results of the evaluations/ recalculated

The first cycle: Water collection and transportation

In the evaluation report of the first cycle the observation data were presented per village that handed in correctly collected data. The number of households were presented as a total over a number of villages per local health centre. These data could not be used for recalculation of the averages. In her mission report the evaluation expert developed the spread sheets and filled in the collected data per village (Engelkes, 1996). However, because not all 23 villages had complete data (for some the total number of households were missing and in other villages some households seemed to have been counted twice), no recalculations could be made. Recalculations for the second and the third cycle were possible and are presented in the two boxes below.

The second cycle: Water storage and taking drinking water

Results of cycle 2

Indicator 1: The number of households that store drinking water in the house:		
	Before the cycle	After the cycle
Province of Mouhoun	92 %	97 %
Province of Kossi	81 %	90 %
Province of Sourou	65 %	82 %
Indicator 2: The number of households that cover the water container		
	Before the cycle	After the cycle
Province of Mouhoun	75 %	91 %
Province of Kossi	69 %	84 %
Province of Sourou	62 %	61 %
Indicator 3: The number of households that leave the cup for drinking on top of the container		
	Before the cycle	After the cycle
Province of Mouhoun	63 %	76 %
Province of Kossi	60 %	76 %
Province of Sourou	38 %	52 %

*The third cycle: The maintenance of water points***Results of cycle 3****Indicator 1: The number of pumps with a clean drainage system**

	Before the cycle	After the cycle
Province of Mouhoun	25 %	31 %
Province of Kossi	10 %	80 %
Province of Sourou	25 %	100 %

Indicator 2: The number of pumps with dried holes

	Before the cycle	After the cycle
Province of Mouhoun	13 %	69 %
Province of Kossi	20 %	70 %
Province of Sourou	17 %	100 %

Indicator 3: The number of households collecting water at the pump

	Before the cycle	After the cycle
Province of Mouhoun	44 %	61 %
Province of Kossi	27 %	31 %
Province of Sourou	38 %	47 %

