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School of Applied Sciences

MSc. Water Management, Option: Community Water Supply

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CRANFIELD UNIVERSITY

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**A study of the socioeconomic sustainability of a proposed gravity fed
water scheme in Buea, Cameroon**

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Abstract

The water system for the town of Buea has been underperforming for several years now. A rationing system ensures that all areas receive a water supply for at least a few hours a day. At present there are two functioning single tap stands in Bonduma, the area where the research was carried out. The two tap stands serve an area with a population of several thousand people. The lack of sufficient public taps and the intermittent nature of the supply force people to walk great distances early in the morning or late at night to avoid long waits at the tap stand which become congested later in the day.

The current water situation in Bonduma has serious consequences for social and economic development in the area and health is put at risk when the supply is cut for extended periods and people use the local spring instead.

A gravity fed water supply has been proposed to alleviate this problem. The people of the community are all in favour of having closer, more reliable water. A water supply system needs to be designed that will best meet the needs and expectations of the consumers at a cost they can afford while at the same time generating enough revenue to cover the O&M, repair and replacement costs.

The research was carried out in the communities of Wotolo, Bokoko and Bonduma using a qualitative approach involving an interview schedule and focus group meetings .

The research was carried out in the communities of Wotolo, Bokoko and Bonduma and concluded that there is a universally felt need for an improved water supply.

Despite examples of a good community spirit in Bonduma, there is little support for those in need and little evidence of community participation in projects that have occurred previously in the area, To give any water project started in the area the best chance of success there has to be community involvement that goes beyond making an initial cash payment.

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I would like to thank my supervisor Dr James Webster for his help and support throughout my time at Cranfield University. I would also like to thank Alexis Glazer and Engineers without Borders-UK for giving me the opportunity to do my research in Cameroon.

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Finally, I would like to thank my field assistants, Martin Lyonge, Edmond Ndam, Derek Ekoi and Mbella Moki for their invaluable assistance and good company.

Very special thanks go to Edmond Ndam for his help with the transcription work.

Abbreviations and acronyms used

CDE: Camerounaise des Eaux

CFA: Central African Franc

CIG: Community Initiative Group

MDG: Millennium Development Goal

NGO: Non-Governmental Organization

O&M: Operation & Maintenance

SNEC: Société Nationale des Eaux du Cameroun

WHO: World Health Organization

WSP: Water and Sanitation Program

WMC: Water Management Committee

WTP: Willingness To Pay

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1 Introduction

This thesis is an investigation into the likely socioeconomic sustainability of a proposed gravity fed water scheme in Bonduma, an area of Buea, Cameroon on behalf of Engineers without Borders UK and Helps International, a Community Initiative Group (C.I.G) based in Bonduma.

1.1 Cameroon

Cameroon is located north of the equator on the western side of Central Africa. Its neighbours are Nigeria to the west, Chad to the northeast, the Central African Republic to the east and Equatorial Guinea, Gabon and the Republic of the Congo to the south. (Wikipedia, 2009).

Cameroon has been independent from both France and Britain since 1960 and 1961 respectively and a unified republic after a national referendum in 1972 resulted in a new constitution which brought together the Francophone and Anglophone parts of the country.



Figure 1 Map of Cameroon (University of Texas)

1.1.1 Population

Cameroon has a population of 18.75 million (2007) which is growing at a rate of 2.0% per year and its Human Development Index (HDR) of 0.532 ranks it 144th out of 177 countries with data (UNDP, 2005).

Life expectancy at birth is 50 years and the mortality rate of children under 5 has remained relatively stable at 148 per 1000 in 2007 as compared with 151 per 1000 in 2001. (World Bank, 2008).

1.2 Millennium Development Goals (MDGs) and Cameroon

In 2004, 66% of the population of Cameroon had access to an improved water source compared with 50% in 1990 (UNDP, 2008). In 2006, 70% of the population had access to an improved water source and 58% of the urban population had access to improved sanitation facilities. According to the World Bank (2008), the rate of improvement of access to safe drinking water in Cameroon appears to be on course to meet target 7c of the Millennium Development Goals (MDG) for 2015 with 70% of the population having access to an improved water source in 2007. (World Bank, 2008)

1.3 Background

Buea is a rapidly growing town situated in Cameroon's South West Province on the eastern slopes of Mount Cameroon (4100m) at altitudes of between 400m at Mile 16 to 900m at Buea Town. Bonduma lies approximately half way between these two parts of town between 600-750m and straddles the main dual carriageway that runs up the mountain from Mile 16.

A combination of factors makes Buea an attractive place to live. A pleasant climate, attractive surroundings, fertile soil, relative prosperity and a low crime rate has attracted many people to move here from all over Cameroon. Adding to the influx are students and associated family members attending the local educational institutions including the University of Buea established in 1993 which the only Anglophone university in Cameroon.

1.3.1 The water situation in Buea

Today Buea municipality has a population of 200 000 and uses a water supply originally designed for no more than 50000 people. In the last decade this situation has resulted in an inadequate and deteriorating drinking water supply with the result that daily rationing between the 4 areas supplied by CDE and Camwater is necessary at all times of the year.

In some areas, especially those further down the mountain such as Moliko and Mile 16, the water supply from private connections and public stand taps can be cut off for days and even weeks at a time during the dry season that lasts from December to March. An additional burden on the populace is the absence of established times for the supply of

rationed water supply which often leads to flooding in houses, the wastage of an already scarce resource and higher domestic bills. (Folifac, 2009)

The reduced and unreliable water supply has had profound effects on public welfare, economic productivity and poverty alleviation. In Buea, many women and children have to walk long distances in excess of the maximum value of 500m specified in the Sphere Handbook (The Sphere Project, 2004:63) to fetch or “carry” water. Often women and children have to set off to fetch water well before dawn to ensure that they secure their daily water needs before the water supply is diverted to another area. This has severe social consequences for all those who collect water.

In addition to the time spent collecting water and the associated stress of waiting with up to a hundred others for water that could be cut at any time, it can be unsafe for women walking on bad roads in the dark, it tires children before they go to school and it can result in violence for young men if they intervene to stop latecomers from pushing in.

When the water supply is unexpectedly cut, people have no choice but to walk even greater distances to a local spring or stream to get their water. Not only does this usually take longer, but it also exposes them to potential health risks such as typhoid and cholera which are present due to poor catchment management and human activities in the stream such as clothes washing.

As a result of the increased demand stressing the inadequate supply and previous disputes between the council and the CDE over payments for water used at them, the number of public stand taps in the Buea area has reduced from 37 in 1991 to 16 in 2006 (Njwi, 2006:37)

1.4 Bonduma

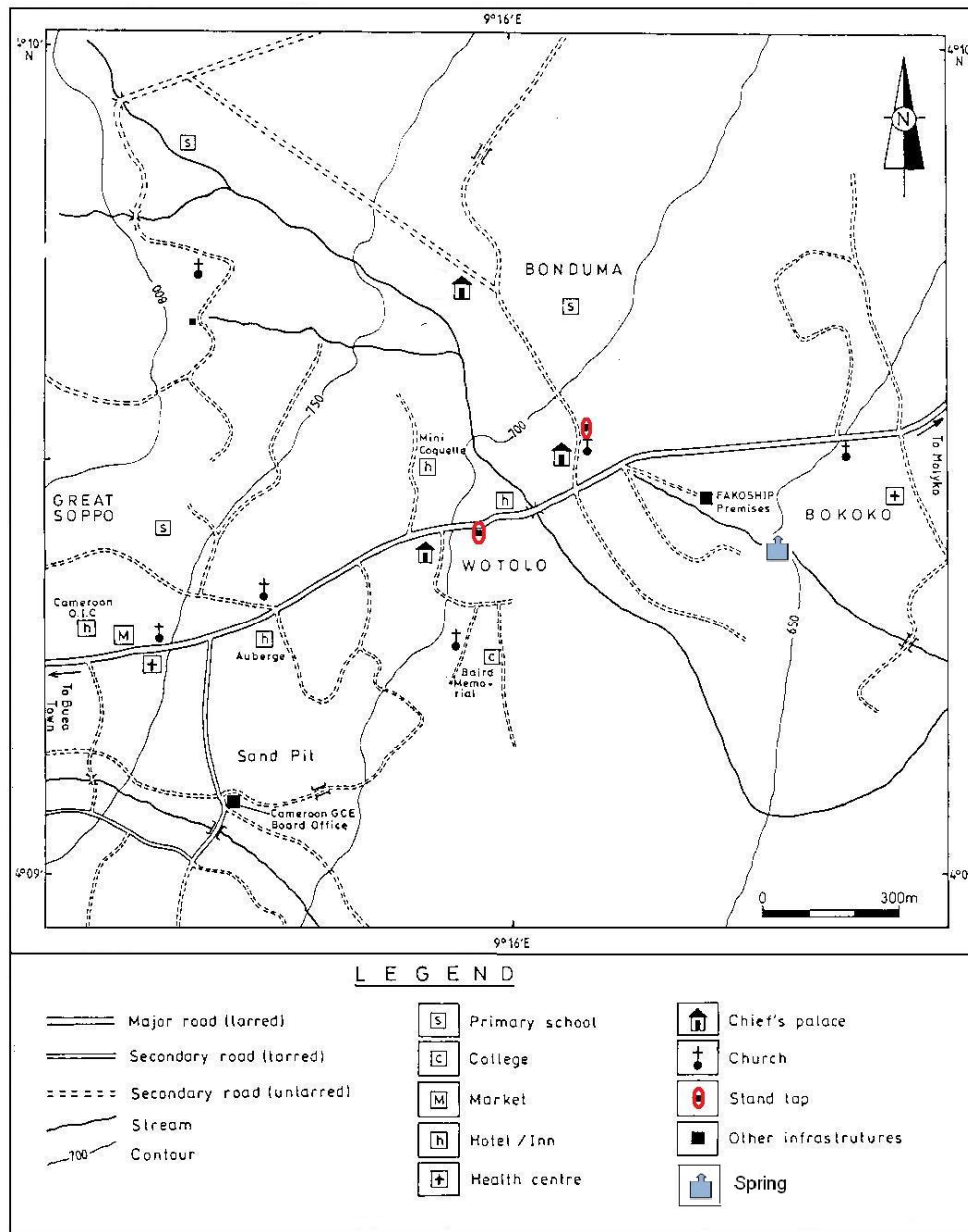


Figure 2 Map of Bonduma area (Courtesy Brendan Sherry)

1.5 Water providers in Buea and Cameroon

The main supplier of water in the municipality is the PPP of CDE and Camwater which took over responsibility for supplying much of the water in Cameroon from Société Nationale des Eaux du Cameroun (SNEC) in 1992.

CDE is responsible for production, distribution, maintenance and replacement work as well as commercial activities and the infrastructure is owned by the parastatal company Camwater which is also responsible for setting water policy and regulations. Local people often still refer to the water supplier by the initials of the previous state-owned entity “SNEC”.

In addition to the CDE and Camwater partnership, numerous community-led water supply schemes exist in Buea and the south west of Cameroon and have experienced varying degrees of success. These schemes are often brought about with the technical help and financial backing of foreign NGOs as well as receiving backing from local contributions and local and national government. (Schouten, Moriarty, 2003:37).

1.6 Aim and objectives of the Study

The study was intended to be part of a feasibility study for a gravity fed water scheme proposed by Helps International, a local Community Initiative Group (CIG) and supported by Engineers without Borders UK (EWB-UK)

1.6.1 Aim

The aim of this study is to investigate the likely socioeconomic sustainability of a proposed gravity fed water scheme supplying water to Bonduma.

1.6.2 Objectives

The objectives of this study were to carry out:

1. An assessment of the current water usage practices / degree of need.
2. An assessment of the degree of community participation in projects.
3. An assessment of any correlation between willingness / ability to pay for water and actual payments.
4. An investigation into the mechanisms of socioeconomic support existing in communities, including patterns of expenditure.

2 LITERATURE REVIEW

Sustainable community water management systems are equitably and fairly run and give men and women, the rich and the poor access to water at prices that they can afford and without damage to the environment. (Fonseca; Bolt, 2002:69).

2.1 Participation

Narayan's (1995:1) study of 121 completed rural water supplies in 49 developing countries showed that participation contributed significantly to project effectiveness and resulted in a significant rise in the proportion of systems in good condition and the numbers of target population reached where it was present.

If a project is initiated because of user demand and the community is involved from the outset, a greater sense of ownership results and commitment to the service is strengthened. (Brikke, Rojas, 2002:16).

Table 1 Cross-tabulation of overall project effectiveness with beneficiary participation by number of projects (Narayan 1995:23)

Overall project effectiveness	<i>Low</i>	21	6	0	27 (22%)
	<i>Medium</i>	15	34	5	54 (45%)
	<i>High</i>	1	18	21	40 (33%)
	<i>Total</i>	37 (31%)	58 (48%)	26 (21%)	121 (100%)
		<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>Total</i>
		Overall beneficiary participation			

A consequence of the tendency towards top down decision making in Cameroon is that projects are often begun by the local traditional leaders and perhaps a "big man" who is a successful local businessman or politician who may well be acting out of a sense of civic responsibility and altruism. Following this model, the community often has little or no say in the planning and implementation of projects and their first contact with a project is when they are informed of the need to contribute to the project either with cash or in kind. (Shouten, Moriarty, 2003:67).

Initial contributions by the community to a new scheme can lead to a sense of involvement in the short term by members of the community, there is no guarantee that this will translate into lasting willingness to pay. (Brikke, Rojas, 2002:16). In a survey carried out by Helvetas-Cameroon, Stucki (2006:13) reported that 43% of respondents preferred to give a cash contribution rather than paying in kind as it demonstrated their commitment more due to the difficulty of raising the cash.

2.1.1 Ownership

An aspect of successful schemes is a sense of ownership at the community level that is ideally engendered by participation of those at all levels of the community from the outset of any project. Consideration of gender and equity principles throughout the project implementation and post construction support stages is essential if equal access is to be achieved and for long term sustainability (Fonseca, Bolt 2002:72). In practice, the degree of community ownership and participation of the ordinary members of the community is often determined, but not necessarily prevented, by local leaders and elites (Shouten, Moriarty, 2003:68).

2.2 Economic factors

2.2.1 Cost recovery

Cost recovery has been recognised as an important component of a successfully run community water supplies, particularly after Principle 4 of the Dublin Statement on water and sustainable development January 1992 in part stated that:

“Water has an economic value in all its competing uses and should be recognized as an economic good. Within this principle, it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price.”
(United Nations Documents, 1998)

The funds raised from fees or tariffs often prove to be inadequate to pay for the routine operational, maintenance, repair and replacement costs of a scheme, either because they are too low or because people are unable or unwilling to pay them (Carter 2009:2). A situation then develops where the system gradually degrades due to the lack of resources leading to a loss of user confidence and reluctance to pay. (van-Wijk, 1987:1)

2.2.2 Demand and willingness to pay

Deverill et al, (2002:8), define willingness to pay as the measure of the demand for water based on how people value an improved service.

Factors affecting community willingness to pay (Brikke, Rojas, 2002:16)

- Demand and participation of villages
- Local customs and traditions

- Perceived benefits derived from improved services
- Levels of income

Willingness to pay is a complex concept that involves social, economic, cultural and institutional factors. Often communities have had no experience of paying for water in a community either because water from public tap stands has always been free as in Cameroon (Shouten and Moriarty, 200), or because it is regarded as a “gift from God” (Fonseca, Bolt, 2002:81). To overcome any reluctance to pay for something that has previously been free, people must be convinced of the benefits of having convenient, plentiful and reliable clean water. (Brikke, Rojas, 2002:16). The approach taken depends on which part of the community is being addressed. Poorer members of the community may be attracted by the increased hygiene levels that using greater quantities of water brings and by the fact that more readily available water allows them to grow more food and perhaps engage in income generating activities. (Fonseca, Bolt, 2002:85). Richer people appreciate the convenience of a reliable supply that matches their standard of living and pattern of consumption (Brikke, Rojas, 2002:16).

2.2.3 Transparency

Willingness to pay is positively affected by trust engendered by transparency between the community and the local and external organisations responsible for managing the water services. (Fonseca, Bolt 2002:85). A lack of transparency stemming from a poor flow of information about e.g. who pays and how much is a major barrier to ownership. Project information is often the preserve of the leadership and represents economic or political power (Stuki, U. 2006:7).

2.3 Role of continuing support

The funds raised by individual contribution from poor communities will often be insufficient to cope with major repairs or with the eventual replacement of a water system even with a well managed community water supply. Carter (2009:2) and Shouten and Moriarty (2002:4) both stress the importance of continuing external support from e.g. NGOs or Governments for systems in the form of technical expertise and resources. This is because the amounts of money that can be raised from individuals are set at such a low level that they are insufficient for paying for anything beyond minor O&M, replacement and repair tasks.

The caretakers responsible for daily operation and minor maintenance and repairs are a critical part of a successfully managed scheme and yet are unappreciated and often poorly paid if at all by the communities that they serve. Stucki (2006:20) relates that in a survey, 50% of caretakers asked were paid and half of them were only paid on an irregular basis. As a result, many of these individuals were not motivated to do their

work and often resorted to withdrawing their labour unless they get paid by rich benefactors in the village or emigrants living abroad who are more aware of their importance to the community.

3 METHODOLOGY

3.1 Overview

The three villages in the Bonduma area were visited over an 8 week period in cooperation with Engineering without Borders UK (EWB-UK) and Helps International (HINT), Buea, Cameroon.

This chapter describes the methods used during the fieldwork used to carry out the objectives.

The objectives of this study were to carry out:

1. An assessment of the current water usage practices / degree of need.
2. An assessment of the degree of community participation in projects.
3. An assessment of any correlation between willingness / ability to pay for water and actual payments.
4. An investigation into the mechanisms of socioeconomic support existing in communities, including patterns of expenditure.

3.2 Theoretical aspects of methodology

Neuman (1999) describes four dimensions of social research:

- The purpose of the study.
- The use of the research.
- The time dimension of the research.
- The data collection methods used.

3.2.1 Purpose of the research

This study aimed to investigate the community's current water situation, to correlate willingness/ability to pay with expenditure patterns, mechanisms of socio-economic support existing in the communities and expenditure patterns.

A mix of exploratory and descriptive research goals is involved in this study as there is an exploratory element of needing to become familiar with the setting and to gain a picture of the conditions in Bonduma. There is also a need to provide a detailed picture

of and to report on the background and context of the socioeconomic conditions and opinions there. (Neuman, 1999:22).

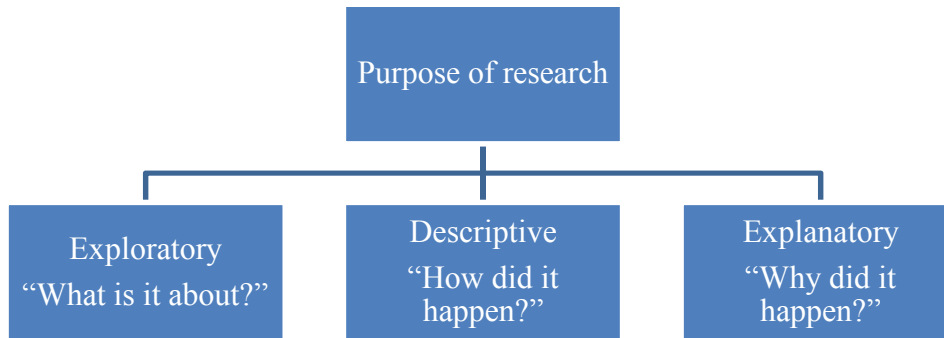


Figure 3 Purpose of research study (Neuman, 1999)

3.2.2 Use of the research

The thesis fieldwork was carried out at the beginning of a feasibility stage of a project proposed by Helps International (HINT), a Community Initiative Group (CIG) based in Bonduma and supported by Engineers without Borders UK (EWB-UK).

Basic research seeks to reject or support theories about the social world and the goal is to contribute to basic theoretical knowledge, whereas applied research is directed at a specific defined problem and its aim is to obtain a practical use for the results. The results of the study may be put to practical use but the research attempted to understand aspects of social reality i.e. to discover people's thoughts and feelings on a range of topics and so the research can be classified as basic. (Neuman, 1999:23, 25).

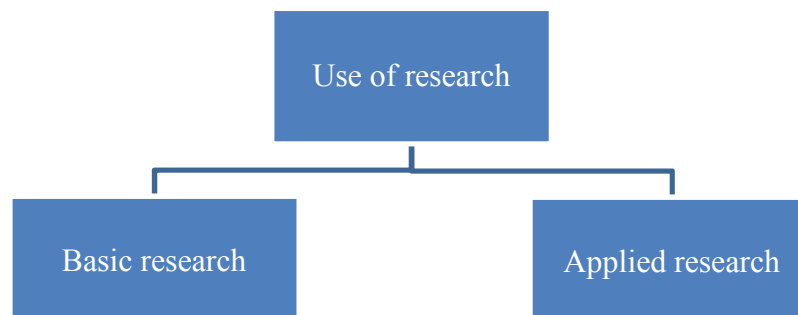


Figure 4 Use of research (Neuman, 1999)

3.2.3 Time dimension

Socio economic and water use data collected from the inhabitants of 3 communities over a period of several weeks and compared against the objectives. There was neither the time available nor any previous socio-economical data available for the communities in the study for the purposes of comparison so cross-sectional and longitudinal approaches to the research were precluded. A case study approach was therefore taken.

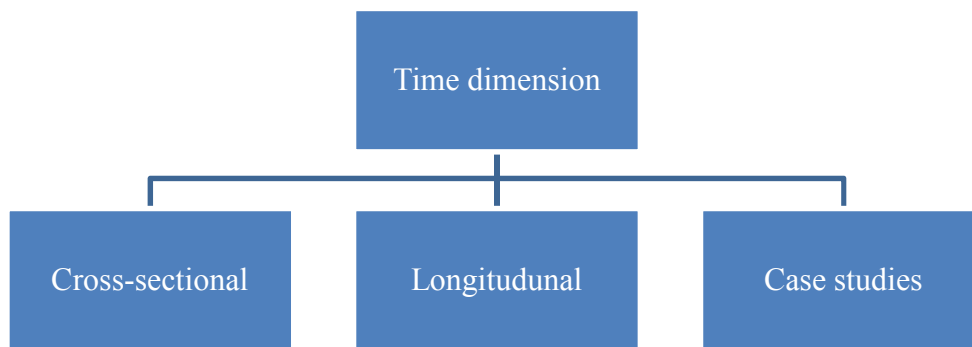


Figure 5 Time dimension in research (Neuman, 1999)

3.2.4 Data collection methods

A qualitative research method has been selected as the intention is to collect data about community attitudes and perceptions and to develop theory from analysis of the data obtained in response to the questions without any preconceptions in accordance with grounded theory.

The principle tool for data collection is a series of interviews using a series of open semi-structured questions.

3.3 Study design and evolution

A flexible design approach allows the research method to evolve during the study.

3.3.1 Evolution of the methodology

The first three interviews carried out were used to test the questions, the recording equipment and the interviewer. After the first batch of interviews, the interview guide was modified to make some of the questions more specific and to obtain more information regarding water sources and usage. More questions were also added about money matters.

In an attempt to get interviewees to rank important needs besides water, interviewees 005 to 008 were asked to rank the importance of 4 factors: health; education; water and security. Whether it was because the question was too vague or that the ranking concept was alien to the interviewees, the ranking question was subsequently dropped as it was awkward and laborious to explain it to them. Added to this, it is understandably difficult for a person to rank fundamentally important aspects of their lives such as education, water supply security and health relative to one another and it would not have been unreasonable to select the highest ranking for all of the factors.

Table 2 Study design and evolution

Date	Aim(s)	Summary of Objectives	Methodology
01/05/09- 03/06/09	To investigate and report on community willingness and ability to pay for provision of water by the proposed gravity fed scheme. To carry out a survey of health, hygiene and sanitation knowledge attitudes and practices	Feasibility study of willingness and ability to pay for scheme maintenance Baseline KAP survey of existing health, hygiene and sanitation. Assessment of the sustainability of the scheme including a SWOT analysis	Literature review and development of semi structured interview schedule
04/06/09			Health and sanitation survey rejected due to resource constraints.
04/06/09- 21/06/09	To investigate and report on community willingness and ability to pay for provision of water by the proposed gravity fed scheme.	Assess any correlation between willingness/ability to pay for water and actual payments. Investigate mechanisms of socio-economic support existing in communities Investigate patterns of expenditure	Guided walks with hosts and familiarisation. Met with individuals with interests in water situation.
22/06/09- 26/06/09			Test interviews undertaken. Observation
27/06/09 – 28/07/09			Ranking question dropped from question schedule. Water questions reorganised

3.4 Practical aspects of methodology

The section covers the data collecting methods including the sampling plan, the tools used for collecting the data and the sources of information used for the study.

Sampling Plan

3.4.1 Sampling method

A quota sampling method (Robson 2005:264) was selected in an attempt to get a reasonable cross-section of information from the gender and age perspectives.

Morse (2000) cited in Robson suggests that if a relatively small amount of data is expected from each interviewee in a study based on semi-structured questions, a

relatively large sample of 30-60 individuals should be selected. Robson (2005:199) describes the concept of saturation in a flexible design where questioning is continued until a point of saturation is reached where nothing new is added to what has already been learnt.

There is no available recent information on the male to female ratio in the population therefore a 50:50 male to female ratio was selected to ensure that there was an even representation of gender.

Table 3 Sampling groups

Sample group	Number
Males over 25 years old	14
Females over 25 years old	9
Youths and children 20 years or less	10

3.4.2 Village selection

Each of the villages in Bonduma that would possibly benefit from the proposed scheme was represented in the survey as can be seen from the locations given in the interview details in Table 4.

3.4.3 Tools for data collection

Interviewees were mostly selected at random (within the categories) by randomly selecting a direction at the rough centre of an area under study and speaking to the first person satisfying one of the groups in Table 2 . Some of the interviews were arranged by introduction such as person/interview (004) which can be regarded as a case of purposive sampling. This person was of interest due to their particular reason for collecting water. The interviews were often held in the front room or on the porch or veranda outside the house.

Language was rarely a barrier except for on a couple of occasions where the responses were almost entirely in Pidgin and approximately a third of the interviews were conducted without assistance. Pidgin is the lingua Franca of Central and West Africa language and is used. After some weeks it was possible to get the gist of conversations held in Pidgin which was particularly useful in the focus group interviews.

3.4.4 Information sources

3.4.4.1 Individual sources

Mr Martin Lyonge helped me with initial familiarisation in the Bonduma area and was an invaluable source of information about village boundaries, community power structures and made several introductions to interviewees. Several village elders also contributed information about the community.

3.4.4.2 Individual interviews

Semi-structured questions have been selected to collect the qualitative data and are arranged in an interview schedule (Appendix A) to ensure that all interviewees were asked the same framework of questions.

The wording of semi-structured questions can be rearranged and the question order can be changed according to the individual being interviewed and the circumstances. Questions can also be added or omitted.

The use of mainly open questions is intended to encourage people to answer questions as fully as they wish in their own words without feeling restricted and to permit the discovery of unanticipated information which can be followed up where appropriate with probes and prompts. The disadvantages are that irrelevant information can be generated especially if the questions are not sufficiently focussed and different degrees of detail can be obtained from different respondents. (Neuman, 1999:261)

3.4.4.3 Focus group interviews

Focus group interviews were held as a means of confirming the credibility of the information gained in the individual interviews. It was very difficult to arrange ideal focus groups of e.g. 6-8 individuals with similar characteristics. The first group interviewed was 19 members of the Upper Bonduma Ladies Social Group at a house near the Mini Coquette bar/hotel in Upper Bonduma. The ladies were in the middle of a ferocious argument about alleged inappropriate drinking and dancing by one or more of those present at a “cry-die” organised a few days previously in memory of the recently deceased brother of one of the ladies when the researcher and assistant arrived. This created a challenging atmosphere to ask questions in and some of the ladies were not receptive to being questioned.

The focus group questions can be found in Appendix B.

3.4.4.4 Observation

Many walks were taken through different areas of Bonduma during the first 4 weeks of the study arranged by our hosts at HINT for the purposes of familiarisation and to look at the local water sources. From these walks, it is clear that despite obvious signs of development in the form of numerous, sometimes half-completed buildings, Bonduma is a relatively rural area where there is still a strong connection to the land. Almost any

patch of cultivatable land between buildings and alongside the roads is planted with maize, cassava, yams or bananas. The distribution and mix of housing was taken as a useful indicator insofar as there were no areas that can be defined as being exclusively rich or poor neighbourhoods. In many places large mansions are built between much smaller and older traditional “Karibut” houses built from wooden planks.

3.5 Ethics and survey limitations

3.5.1 Interview bias

Bias during the interview was possible due to misunderstanding of questions, anxiousness to please the interviewer or because of the presence of others nearby, especially when more delicate subjects such as money were being spoken about. Before each interview, it was made clear to the interviewee that there were no right or wrong answers to any of the questions and that it was important to the study results to know their true views. In addition, the fact that they were also told that they could ask for clarification or why they were being asked a particular question put them at ease.

In addition, there was a danger of cultural bias from both sides (Neuman, 1999:408) whereby cultural preconceptions from both the interviewer and the interviewee could have affected the interview outcomes. This was minimized by the interviewer adopting as neutral a stance as possible during the interview and by the fact that the researcher has experienced a wide variety of African and Asian cultures and societies.

The majority of people in the area spoke both English and Pidgin so that only on a handful of occasions where no English was spoken was there a possibility of translator bias being introduced. After a few weeks in the area it was possible to understand the general gist, if not the detail, of conversations held in Pidgin which was particularly useful in the focus group meetings.

3.5.2 Cultural practices

After becoming a familiar face in the area, it was possible to move freely around and conduct interviews without assistance. The local culture permits men to speak with women even when alone in the house which is not the case with some cultures. Although there are Muslims in Buea, the religion in the Bonduma area is predominantly Christian and there were no Muslims encountered in any of the 3 villages in the study area.

3.5.3 Representative sampling

There was very little information available about the population in the area to be studied before departure from the UK. The size of the population, the standard of the spectrum of wealth, the religious make-up and the male to female ratio were all unknown.

The use of a quota sampling method ensured that the genders were equally represented, that different age groups were consulted and that each of the 3 areas were also represented.

3.5.4 Survey limitations

The use of a sample of 30 people did not result in saturation on all the questions posed in the interview schedule and clearly represented a tiny fraction of the potential population to be served by the new scheme.

3.6 Practical problems encountered

The first problem encountered was extraneous noise either from the road, from very loud televisions or radios, from animals and other people. This was initially very off-putting and very frustrating when it came to transcribing the interviews. The problem was largely solved by asking for the radio or TV to be turned down and to explain that the microphone was very sensitive to noise. There was also the problem that many people could not resist joining in with the interviews. However this sometimes resulted in useful information coming to light.

Another problem was the fact that in several cases, a woman that had been selected would ask a male relative to take the interview instead. This is one reason that more men (14) were interviewed than women (9). More women also refused to be interviewed than men.

3.7 Summary

The methodology was designed to meet objectives 1 to 4 and was successfully carried out. The point of saturation whereby little or no information emerged in the responses was only reached for the question about rainwater use which everyone used but did not drink.

4 RESULTS

A Helvetas study carried out by Stucki (2006:15) in North West Cameroon includes a section that ranks the expenditure of rural and semi-rural households in neighbouring North West province. The survey data serves as a useful comparison with the expenditure data obtained from this study.

The study ranked household in NW Cameroon expenditure as follows: 1 funerals and cry-dies, 2. education and health, 3 alcoholic drinks, 4 food, development projects (including O&M, water levies, electricity, 5 transport, 6 other social activities (e.g. weddings, bride price and annual feasts) and 7 luxury goods such as TVs, cell phones and cars, a car.

An idea of the costs of some goods and services in Buea, can be found in Table 2.

Table 4 Costs of goods and services in Buea (July 2009)

Local goods and services in Buea	Cost: CFA (USD) 1 USD = approx 460 CFA
Water:	
<i>Unit cost (m3)</i>	364 (0.79)
Food:	
<i>Onions (small)</i>	50 (0.14) each
<i>Tomatoes</i>	38 (0.08) each
<i>Bananas</i>	20 (0.04) each
<i>500 g pasta</i>	250 (0.54)
<i>Small loaf of bread</i>	200 (0.43)
<i>Eggs</i>	75 (0.16) each
Eating out:	
<i>Omelette in "chop"(eating) house</i>	100 – 150 (0.22 -0.32)
<i>Meal at mid range restaurant</i>	1000-2500 (2.17-5.43)
Beverages:	
<i>650 ml beer</i>	500 (1.09)
<i>650 ml soda</i>	350 (0.76)
Transport:	
<i>Daytime taxi (to 3 km)</i>	100 (0.22)
<i>Daytime taxi (3-5 km)</i>	200-250 (0.43-0.54)
<i>Bus to Limbe (25 km)</i>	600 (1.30) one way

4.1 Interview details

34 individual interviews of 33 end users and one key informant were carried out as well as 2 focus group interviews in the villages/areas of Wotolo, Bokoko and Bonduma between the 22nd of June and the 28th July 2009. (See Table 5). Interviewees were offered anonymity and names have only been used where permission has been given. In all instances, the interview number corresponds to the interviewee number e.g. interview (004) was conducted with interviewee (004) and the interviews are numbered in chronological order.

Table 5 Interviewee details

Interview	Location	Date	Age	Gender	Religion	Stakeholder	Selection	Notes
1	Bokoko village	22-Jun	54	Female	Pentacostal	End user	Introduction	Retired councillor
2	Upper Bonduma	25-Jun	36	Female	Baptist	End user	Random	Quarter head's wife
3	Upper Bonduma	26-Jun	25	Male	Pentacostal	End user	Random	Student
4	Bonduma village	29-Jun	14	Female	Catholic	End user	Introduction	School child
5	Bonduma village	02-Jul	18	Female	Pentacostal	End user	Random	Student
6	Upper Bonduma	02-Jul	32	Male	Presbyterian	End user	Random	Mechanic, farmer
7	Wotolo	03-Jul	54	Male	Pentacostal	End user	Random	Building works manager, farmer
8	Bokoko	07-Jul	28	Female	Apostolic	End user	Random	Shop owner
9	Bonduma village	09-Jul	36	Female	Presbyterian	End user	Random	Shop owner
10	Bokoko	09-Jul	69	Male	Presbyterian	End user	Random	Retired driver
11	Bokoko village	13-Jul	57	Male	Bakwerian	End user	Introduction	Traditional Healer
12	Bokoko	13-Jul	69	Male	Presbyterian	End user	Random	Retired soldier
13	Lower Bonduma	14-Jul	18	Female	Presbyterian	End user	Random	Housewife
14	Bokoko village	15-Jul	60	Male	"Many churches"	End user	Random	Retired civil servant
15	Bonduma Gate	16-Jul	26	Female	7th Day Adventist	End user	Random	Student, single mother
16	Bonduma Gate	16-Jul	28	Male	Presbyterian	End user	Random	Shop owner
17	Bonduma Gate	16-Jul	17	Male	Gospel	End user	Random	At school
18	Bokoko village	17-Jul	64	Male	Baptist	End user	Introduction	Traditional Council member
19	Bonduma Gate	17-Jul	28	Male	Pentacostal	End user	Random	Shop owner
20	Bonduma village	21-Jul	63	Male	Baptist	End user	Random	Village Elder
21	Bonduma village	21-Jul	25	Male	Baptist	End user	Random	student, builder
22	Bonduma village	22-Jul	20	Female	Pentacostal	End user	Random	Housewife
23	Bonduma village	21-Jul	18	Female	Presbyterian	End user	Random	Unemployed, trained nurse
24	Bonduma village	22-Jul	27	Female	Presbyterian	End user	Random	Housewife
25	Bonduma village	22-Jul	20	Male	Bakwerian	End user	Random	village Elder
26	Bonduma village	23-Jul	55	Male	Presbyterian	End user	Random	Farmer
27	Bonduma village	23-Jul	40	Female	Evangelist	End user	Introduction	Widow
28	Bonduma village	23-Jul	42	Female	Pentacostal	End user	Introduction	Housewife
29	Upper Bonduma	24-Jul	19	Male	Catholic	End user	Random	At school
30	Wotolo	24-Jul	20	Male	Pentacostal	End user	Random	Student
31	Bokoko village	24-Jul	55	Female	Baptist	End user	Random	Stall holder
32	Wotolo	27-Jul	19	Female	Pentacostal	End user	Random	Cook
33	Bonduma village	28-Jul	48	Male	Presbyterian	Key informant	Introduction	WMC President

The following sections together seek to determine whether there is the demand in the community for a new water system, whether community members are likely to involve themselves in a project and whether the economic resources and will are available to support the ongoing O&M, repair and replacement costs of the system.

4.2 Water supply and usage

Water users can be placed in two main categories

- People with a metered supply either into their houses or to stand pipes serving compounds composed of several dwellings, and
- Tap stand users

4.2.1 Users with metered household connections

A concern that people with household connections had was the cost of the water and the intermittent supply. A 19 year old student living at home: “if there was a major change, I would like to see a constant supply of water and not an irregular supply like we have now.”

The cost of connections and the rental for the meters is high enough to have forced some to get themselves disconnected (001, 031) and the cost of getting a household connection was cited as a reason that many people could not afford metered water. A single mother aged 26 living near Bonduma Gate (015) said “the problem is paying large sums of money for the water to be connected in your home...many families do not have extra money to undertake such large projects.”

People with a metered supply to their homes in Bonduma have some empathy towards those less fortunate than themselves: A 19 year old woman living with her parents in Wotolo (032) said “I would like to see changes because at least it would help Bonduma people because many people in Bonduma do not have water, for example Bonduma Gate people they come and they stand at Mini Coquette (Wotolo) tap.”

4.2.2 Tap stand users

The intermittent nature of the water supply at both taps in the Bonduma area is a major concern of people who use them. A 20 year old student nurse (022): “I like good water from a good source, water which never runs dry.”

Because of the lack of taps, the low water pressure and the intermittent nature of the supply long distances are travelled and a lot of time is wasted to get water. An 18 year old nurse from Bonduma village (023), said “We'll like water to come a little bit nearer in the village, because the distance normally is very far. If it comes nearer, it will help

even the little children who go to fetch water”. A 14 year old school girl (004) who fetches water with her brother for the family business said “Children suffer from having to get up very early in the morning to be sure of getting the water that the family needs”

The situation is not helped by the bad condition of the side roads in general and Bonduma village in particular despite efforts made to maintain it in recent years. Stress associated with crowding at the tap was mentioned, Amos, (007) a builder and farmer living in an undeveloped part of Lower Bonduma:” it can take even 40 minutes there because sometimes even to carry you can be vexed and you can come back to the house because there will be no way, everybody will be fighting to carry. Amos went on to say: “so we go by the night at three o’clock (when) everybody is asleep so we don’t have problems”.

A retired councillor and mother of 5 aged 54, from Bokoko village (001) and a 36 year old housewife from Upper Bonduma (002) both mentioned that because the Wotolo tap stand is on the southern side of the main dual carriageway there are concerns about the safety of people, particularly of children crossing the road from the northern side to use the tap, especially when it is dark.

Local people without household connections use between 40 and 200 L a day unless there is an economic use for the water which for example raises the amount used to 250 – 300L per day for the families engaged in water fu fu production (004, 013).



Figure 6 Wotolo tap stand

4.2.3 Alternative water sources

Rainwater and water from a spring known as the Ndonga are alternative sources of water for people local to the Bonduma area. Awareness of alternative sources of water and the current usage is important information to have with regards to sustainability. People may begin to defect from a water system that is beginning to fail back to the traditional sources, if they are unwilling to pay for a service of diminishing quality and reliability. (Rojas, 2002:17)

4.2.4 Rainwater

In the rainy season, many people use rainwater collected from building roofs which is almost universally regarded as unfit for drinking except by some of the older generation (031) as the “zinc” is regarded as being unclean. An 18 year old mother (013) from Bonduma village commented: “It’s not good for drinking because the thing is dirty; we know the thing is dirty”.

Rainwater is used for general household cleaning, cooking or washing clothes. There is a reluctance to use it for personal washing as the soft water is not effective at removing soap suds. Water that falls directly into containers is considered fit to drink (023).

4.2.5 Spring or stream water?

The Ndongo spring south of the main road is the nearest permanent natural source of water for all consumers when the water supply is cut and is used by many people in the dry season: a retired man, aged 69 (012) said “In the dry season we rush down there, when they cut the water we get water from down there”.

In the past water from the spring was regarded by everyone as being clean and safe to drink and even today some people are proud of its quality (006). In recent years however, increased anthropogenic activity around the catchment and in the stream itself has been linked with illness: Amos (007) “when we came here we were drinking it but now we see that it is not good because sometimes my family had typhus” . Sophie (027), a 40 year old mother of four from Bonduma village: “Children sometimes get ill from drinking the water when they are too impatient to wait for it to be boiled”.

The Ndongo spring is 300m south from the main road where the Wotolo tap is and is reached by unlit and uneven paths. This exposes people carrying water to the swarms of mosquitoes and midges at the stream and can be unsafe to use at night. A 19 year old man (017) said “when you need water in the evening you can’t go down there (to the stream). It is dangerous because boys who smoke marijuana loiter around there and harass people who come down to fetch water.”

4.3 Community participation and involvement

A key element leading to sustainability is a sense of community involvement and ownership at all levels (ref). The following section attempts to determine the prospects for such involvement and ownership in the proposed scheme with reference to concrete examples of goodwill shown by some people for the common good.

4.3.1 Examples of community spirit/cohesion

There is evidence of a good community spirit in Bonduma. A few people voluntarily maintain the road side drainage ditches at their own initiative in an attempt to prevent the water run-off from damaging the road even more. Some however, make the problem worse by dumping rubbish in the ditches. The road was also re-graded 2 years ago at considerable expense thanks to the efforts of a man who moved into the village several years ago.

During a measles vaccination programme that happened in Bonduma village during the study, several local people gave up 2 days of their time to help with registering the inoculations on a house to house basis.

It is difficult for normal cars to travel through Bokoko and Bonduma villages because of the parlous state of the road, so the local traditional healer Mr Ikome Kinge (011) uses his Landrover free of charge to help people move their dead for burial.

4.4 History of projects in Bonduma

The history and awareness of previous projects in the Bonduma area and the community's commitment to them is worth examining for evidence of community participation and project sustainability.

When asked whether there had been any projects of any kind in the area before now, the majority of the respondents did not know of any. Community projects that were mentioned were the bilingual primary school and the village hall. As well as government and municipal funding, the Chief had asked for a cash payment from each household of 5000 CFA (US\$10.87) towards the school construction project (023). Others interviewed spoke of the municipal projects organised and funded by the local council and national government which surfaced the main road 4 years ago and which later installed street lighting for the road.

A young mother (013) living in Bonduma village said that she had heard of another water project in the area. This presumably was referring to the Great Soppo-Bonduma water project that came to light about 4 weeks into the study. When asked, she said that they had no idea who was responsible for the organising the other project.

4.5 Economic factors

4.5.1 Attitudes to money

Approximately a third of the questions in the survey were dedicated to investigating attitudes to money, what the main expenses are in people's lives, whether they were willing (or able) to pay for water and with what provisos, if any.

4.5.2 Help for the vulnerable and those in need

It is a challenge for a person making a brief study of a community to get a sense of the support mechanisms and cohesion that holds a community together, particularly when money is involved. It was hoped that an insight would be gained using the question "How does your community help those in need?"

Aside from one village elder (020) who said that the needy could appeal to the Chief for help, seven of the people interviewed said there was no help to be had from the

community “there is no such thing here” (013) and that money was tight for everyone: as a retired driver living in Bokoko (010) said “For that one, who is poor?” meaning that he regarded himself as being quite poor.

The researcher was told on several occasions by different sources that better off village elders often make unofficial (and low key) visits to the sick to offer financial assistance. A 48 year old man (033) who moved into the village 10 years ago said that there were young men in the village who abused the traditional custom of the people living in Bonduma whereby food will always be shared with a guest. He suggested that often these boys would habitually freeload instead of doing “odd jobs” to earn money.

4.5.3 Household expenditure

Perhaps predictably, education, food and health bills were the biggest expenses in people’s lives.

4.5.4 Education

Basic state education at primary level is free in Cameroon but the cost of a year’s secondary schooling or university fees amounts to 50000 CFA (US\$109) per child. The individuals interviewed for this study almost all came from families having at least 3 (in one case 13) children and so education was most often quoted as a family’s greatest annual expenditure.

4.5.4.1 Food

The cost of food for families was difficult to pin down as so many people supplement the food that they buy from the market with food that they grow themselves. Amounts between 1600 and 2500 CFA (US\$3.54 to \$5.40) per day were quoted by several people.

4.5.4.2 Ceremonies and wakes

An expense that was not mentioned by anyone was for funerals and “cry-dies” or wakes which are large events held to celebrate the life of a deceased person by drinking, eating and dancing. The event also allows women to show their grief publically. Several of these events were seen in Buea during the study period, each hosting at least a couple of hundred people. Although (hopefully) not a frequent or regular expense, they are clearly a major drain on household budgets, along with weddings and bride prices.

4.5.4.3 Sources of money in the community

Aside from conventional banks, people in the community can join credit unions, go to meetings (006) or belong to Njangi houses. Membership of these organisations requires that members save on a regular basis.

4.5.4.4 *Njangi houses and meeting houses*

Members of Njangi houses contribute a fixed amount every week (e.g. 500 CFA/US\$1.08) which is kept in a savings account. If a member needs money, they can withdraw money at a very low interest rate and the money is repayable by a certain time. (001, 030). The amount that can be drawn out depends on the amount that has been saved by the individual

In meetings, members save whatever they can afford and at the end of a year that usually runs from December to December, the money is distributed to several people in the scheme so that they “have an amount to do something substantial with” (030).

For those without collateral for a bank loan or membership of a Njangi house or access to a meeting, it was suggested by several people that harvesting and selling vegetables and fruit or “going to the farm” was one way to raise money.

4.6 Uses of surplus money

Approximately half of those interviewed were unemployed, on a pension or in education so for some of them the answer to the question about what they would do with any extra money was somewhat hypothetical. It was also apparent that people in Cameroon, as elsewhere can be reluctant to talk about money matters. Evans, a local mechanic and farmer (006) said “there is nobody in Cameroon who that has ever accepted that he has money, so you only know this person has money when you see him build a big house”.

4.6.1 Investment and saving

Some people mentioned that any extra money might be used to build to rent (008), invested in a business or farm (027, 033) or saved in the bank for emergencies (013, 031).

4.6.2 Alcohol

Two respondents said that any extra money would be used to buy alcohol. A 20 year old student from Bokoko (030) said “They generally, they basically go drinking, there is a lot of drinking because just in this environment we have between five or six or so bars just in this village. In general people do drinking, a lot of drinking around, smoking. It is very common here”. There are indeed several bars in the Bonduma area and drinking is popular in Cameroon in part because, as one taxi driver put it, “there are no jobs so they drink”. The sight of discarded plastic sachets of “Fighter” whisky littering paths is common.

5 DISCUSSION

In this section, the results of the fieldwork will be discussed and to what extent the objectives were met.

The objectives of this study were to carry out:

1. An assessment of the current water usage practices / degree of need.
2. An assessment of the degree of community participation in projects.
3. An assessment of any correlation between willingness / ability to pay for water and actual payments.
4. An investigation into the mechanisms of socioeconomic support existing in communities, including patterns of expenditure.

5.1 Water usage and need

Refer to section 3.2

The first objective of the research was to make an assessment of the water usage in the Bonduma area. This was necessary to assess the demand for an improved system in the area and from that to assist in making the more difficult assessment of the willingness to pay for an improved water supply.

No one interviewed was completely happy with the existing water supply, the tap stand users suffered from the lack of sufficient tap stands, the long distances that many have to travel to fetch water and the intermittency of the supply. The consumers with pipe borne water to their homes were concerned about poor customer service, intermittent supply and costly tariffs in relation to the service received. When asked about what they would do with extra water, a common reply from tap stand users was that they would be able to increase their levels of household and personal cleanliness and that of their children. People with children of school age were aware that time spent going to the tap would be better spent getting better value from the hard earned money spent on school fees. So the need for a better supply is felt by both categories of user but would have the greatest impact on the poorer members of the community.

Two of the households interviewed made a living from making and selling “water fu fu” which is a doughy product made from cassava tubers, hard work and a lot of water which is used for washing and soaking the processed roots. Closer and more plentiful clean water would enable these businesses increase production and profitability and reduce the strain on children carting up to 80 L of water for several hundred meters twice a day up the bad road from the tap stand.

5.1.1 Alternative water supplies

Refer to section 3.3

The extent to which users would defect from a failing system back to the existing sources is difficult to determine. The interviewees generally had a very high awareness of the purity or otherwise of the currently available sources. This indicates that unless the two existing tap stands continued to supply clean water, the majority of people would stay with a newer system even if it was operating below specification as long as the water was pure rather than go to the spring.

5.2 Community participation and projects

Refer to sections 3.4 and 3.5

The second objective was to make an assessment of the degree of community participation in projects by looking at the past record of the community involvement in projects.

The community's history with projects is difficult to judge based only on the two projects that were mentioned in the interviews. The Bilingual primary school and Bonduma village hall were projects that were successfully implemented with cash contributions from the community.

Projects affecting the community in the top-down power Cameroon are often conceived, planned and implemented by local politicians, village leaderships and elites with little or no input from the average community member. Households are then asked to pay a sum towards a service or structure that may well be useful and welcomed by them but that they feel no involvement with and therefore no sense of ownership for. The recent sudden revelation during the field work that a feasibility study had been carried out for the hitherto unheard of Great Soppo-Bonduma water supply project serves as an example of this. The village leadership were under some pressure to pay a sum towards the cost of the feasibility study which also acted as a gesture of commitment before the next stage of the project began. This resulted in each household in Bonduma being asked to pay 5000 CFA (US\$11) and was given about a week to pay. The payment system used was entirely transparent and all payments were receipted by the treasurer. However, only two of the people interviewed said that they knew about any plans for a water project prior to the demand for payment being made.

There is awareness that once installed, a new water supply system will need looking after. People interviewed asked what would happen about maintaining the system after “you” (meaning whatever NGO came to help with the project) left (027).

The Chief is greatly respected and represents the power in his village and all decisions pass through him. (Shouten; Moriarty, 2002:68). The fact that some projects are implemented and run with very little community participation does not necessarily mean that they are destined to fail but they are far more likely to succeed with the full and enthusiastic participation of the community as shown in Naryan’s (1995:1) study of 121 villages in 49 countries. In place of participation, the concept of “sensitisation” was mentioned more than once in the researcher’s presence which in this context sounded like a euphemism for telling people what is good for them without involving them in any way.

Equitable participation of all members of the community could only benefit a future scheme by increasing the sense of ownership and, given the large power-distance relationship existing between members of the community and their leaders, would certainly not erode the authority of the traditional village power base.

Apart from the insufficient water supply, a major factor holding back development in Bonduma and Bokoko villages is the terrible state of the road through the village which is almost impassable by ordinary cars. Although a lot of respondents recognised the road to be a major problem that directly affects their daily lives, nothing has been done to fix it since a local benefactor paid for it to be graded a few years ago. It is hoped that the lack maintenance of the road is not a sign that the community will have problems looking after a complex, O&M intensive water distribution system.

5.3 Economic factors

Objectives 3 and 4 are directly related to the economic factors

Analysis of the results shows that every person except one interviewed for the study was in favour of a more reliable and more convenient water supply and was willing to pay for the water that they used. However there is often a disconnect between good intentions and deeds when it comes down to actual payment and that has a lot to do with the history of public water supply in Cameroon. Water has always been supplied free of charge from the tap stands all over Cameroon with payments only being asked for on an ad hoc basis for minor repairs and replacements. This is a manifestation of the view that water is a “gift from God” (Shouten, Moriarty, 2003:26) and should be free for all. Success in the long term may therefore be better ensured by presenting the cost to users as a payment for the service (e.g. the O&M) and not for the water per se. (Brikke; Rojas, 2002:16).

5.4 Expenditure

Refer to section 3.6

As revealed in the Helvetas report (Stucki, 2007) the four main areas of expenditure in communities in the culturally similar area NW Cameroon in descending order are: 1 wakes or cry-dies, 2 health and education, 3 alcohol and 4 food.

The relative expenditure on education and (to a lesser extent health) and food was confirmed by the results of this study but the spending on wakes, alcohol and other festive occasions was not revealed at all. A more comprehensive set of questions about spending habits would have been advisable instead of merely asking for the largest item of household expenditure.

Carter (2009:2) notes that people without improved access to water often say it is their highest priority need but then rank water charges very low or at the bottom on a list of household expenditure.

The amount spent on food ranged between 45 000 and 75 000 CFA (US\$98 and \$163 per month compared to 50 000 CFA (US\$109) for one year at secondary school or university.

5.5 Social support systems

Refer to section 3.6

Njangi houses and meetings are a source of money in the community but to use these facilities, a person either has to save regularly saves or invest a lump sum. There is no organised community support for those in need and cannot earn money and therefore participate in the savings schemes due to poor health, disability or for those who are simply destitute. Anyone who is in this position and has no family members in work to rely on or has no access to an extended family will suffer. Despite this, no one in Bonduma starves because of the African tradition of sharing mentioned by (033) in the results. The Chiefs and elders also quietly help some individuals in need.

5.6 Summary

Objective 1: Currently used sources of water and seasonal variations in use patterns were determined as well as the difficulties involved with collecting water for tap stand

users. There was almost universal acceptance that an improved service would have to be paid for and some understanding of the reasons why.

Objective 2: Community participation is largely in response to instruction from the community leadership but there are examples of individual voluntary acts of good will in the community. Only two people said they had heard a little about the separate water projects proposed by HINT and the communities of Great Soppo and Bonduma for the area, indicating that information dissemination is not a priority.

Objective 3: The researcher was only able to find a partial connection between the willingness/ability to pay for water and actual payments made for other goods and services e.g. education. The fact that there is also a history of monetary contribution to projects in the area is a sign that there is possibly a willingness to pay in the community. (Brikke, Rojas, 2002:18).

Most money was spent on education, health and food. A weakness in the question structure about expenditure meant that spending on and saving for, funerals, festivals and other items was missed as discussed in section 4.4.

Objective 4: It was established that there are unofficial mechanisms of support for those in need in the community but that informal assistance is sometimes offered by village elders (section 4.5).

6 CONCLUSIONS

Water use and need

There is a pressing need for an improved water system in Bonduma. There are only two working tap stands in the area to serve several thousand people and the water only runs for a few hours in the mornings and afternoons. In the dry season the taps can remain dry for several days at a time, forcing people to use a local spring. This exposes them to health risks such as typhoid as the catchment area is unprotected and there is intensive anthropogenic activity all around the spring.

Of the 33 respondents in the 3 areas/villages of Bonduma, 32 of them were in favour of an improved service to different degrees. Respondents relying on tap stand water cited long journeys to the tap stands, long waits once there and the weariness caused by carrying water or pushing it on a cart on badly maintained roads. Those people with household connections were mostly concerned with the intermittent nature of the supply and the water bills which they considered to be excessive given the level of service. Responses to the questions related to the possibility of a better water supply indicated overwhelmingly that users of all social classes were eager for an improved water supply system. The idea that water used should be paid for was acceptable by the majority of respondents sometimes with provisos about the amount that would be charged. This was perhaps unusual considering that many of the people interviewed had never paid for water in their lives but gives some indication of the demand for a more reliable and convenient supply of clean water.

Participation

The community responds well to calls from the local leadership to contribute towards local projects. From the responses to the questions that probed knowledge of and participation in these projects however it is clear that the level of participation at the level of the ordinary member of the community is limited to making one-off contributions towards projects that they may well have had no involvement with up until that point. While this level of community involvement may suffice for the construction of relatively low maintenance projects such as schools and villages halls, it may put the medium to long term viability of a locally run water project at increased risk of failure. Much research in this area e.g. by Narayan (1995) has proved that water schemes with full and equitable community participation are more sustainable than those without.

Socioeconomic support and expenditure

Organised support in the community for the vulnerable or needy is non-existent but that does not make Bonduma exceptional. There is a lot of unemployment in the area and

most people only have the resources to look after themselves and their families. The main items of household expenditure according to the respondents were education, health and food but no mention was made of other expenses such as funerals and alcohol (Stucki, U, 2006).

7 RECOMMENDATIONS

The purpose of the research was to make a study of the socioeconomic sustainability of a proposed gravity fed water scheme for Bonduma in Buea.

As established, the need for an improved water supply ensuring constant, convenient water for all users in the growing communities of Bonduma is undeniable. The people of the community are all in favour of having closer, more reliable water. A water supply system needs to be designed that will best meet the needs and expectations of the consumers at a cost they can afford while at the same time generating enough revenue to cover the O&M, repair and replacement costs.

Community participation has been a key factor in the long term sustainability of hundreds of water schemes around the world and if the people of Bonduma are going to enjoy water from a new gravity fed supply for a long time, existing local attitudes to community participation in community projects will have to change. During project design for instance, the community should be given information about the likely O&M, repair and replacement costs of the different technology and service options available so that they can make an informed choice that is based on how much they are prepared to pay and on what the demand now and in the future will be. Transparency with information will also lead to higher levels of mutual trust between the water committee and the community and engender greater willingness to pay.

Future studies should be directed to making:

- an assessment of demand
- a more comprehensive assessment of the community's willingness to pay (WTP) using a community workshop approach which will begin to instil a greater sense of participation in the community while at the same time gathering data and providing members of the community with an insight into their own WTP.
- an assessment of the community's capacity to operate and maintain a gravity fed water system and recommend areas for suitable financial, managerial and technical training.

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APPENDICES

APPENDIX A: INDIVIDUAL INTERVIEW QUESTION SCHEDULE

APPENDIX B: FOCUS GROUP QUESTIONS

APPENDIX C: INTERVIEWS AND FOCUS GROUP MEETINGS (ON CD)

APPENDIX A: INDIVIDUAL INTERVIEW QUESTION SCHEDULE

<ul style="list-style-type: none"> • Can you tell me something about life here in the village? • Please describe any recent major changes here.
<ul style="list-style-type: none"> • Where do you get your water from (at the moment)? • If from a tap stand: <ul style="list-style-type: none"> ○ Who goes to get (carry) the water? ○ How far is it to carry the water? ○ How long does it take? ○ How many times a day? • Do you use any other source of water? • Where do you get your water the dry season? • Do you ever use rainwater? <ul style="list-style-type: none"> ○ If yes, what use it for? <ul style="list-style-type: none"> ▪ If not for drinking, why not? • Do you ever use stream/spring water e.g. Ndongo? <ul style="list-style-type: none"> ○ If yes, what do use it for? <ul style="list-style-type: none"> ▪ If not for drinking, why not? • Do you know anyone that buys water? <ul style="list-style-type: none"> ○ If yes, from who, how much and what does it cost? • How much water do you and your family (and business) use? <ul style="list-style-type: none"> ○ Per day ○ For how many people? • If you had more water, what would you use it for? • What changes to the water situation would you like see made here?
<ul style="list-style-type: none"> • Have there been any projects of any kind in the area before now? <ul style="list-style-type: none"> ○ If yes, did everyone help and how did they help? ○ Who organised the project? • Who do you think should help if there was a water project started here? • How do you think you could help with a project? • How do you earn your income (money)? • Does your income vary seasonally? • Can you tell me what people do with any extra cash that they may have? • Can you tell me what people do when times are hard and they need some help with money? • How does your community help people in the community who are in need such as the sick or hungry? • What would say you and your family spends most money on? <ul style="list-style-type: none"> ○ Could you tell me how much please? • How do you think that you and your family would benefit from a reliable 24 hour water supply? • What are your thoughts about paying for the water that you use if it meant that you had a better supply? • Do you have anything that you would like to ask me?

APPENDIX B: FOCUS GROUP QUESTIONS

- What is the current water situation in Bonduma?
- How does the situation affect women?
- What would be an acceptable level of supply?
- Who should be responsible for managing the water in the community?
- Who should be represented on the committee?
- What are your feelings about elections?
- Who should pay for running and repairing the water system?

