

# **Why do people live in high-risk rural areas?**

- A study of Tubu, Botswana

***Nina Gustafsson & Ville Niskala***

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**Department of Fire Safety Engineering and Systems Safety  
Lund University, Sweden**

**Brandteknik och Riskhantering  
Lunds tekniska högskola  
Lunds universitet**

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## **Abstract**

The study is based on interviews and is a qualitative study based on grounded theory and answer on why men and women live in high-risk rural areas in Tubu, Botswana. Tubu is a village in the northwestern part of Botswana close to the Okavango Delta. To answer the question the authors discuss risk perception and the differences between men and women. The interviews are about the respondents' lives and the risks they see in the Tubu and how they perceive the risks. There are mainly four reasons why people live in Tubu and the reasons are livelihood, belonging, services and nowhere to go.

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Brandteknik och Riskhantering  
Lunds tekniska högskola  
Lunds universitet  
Box 118  
221 00 Lund

[brand@brand.lth.se](mailto:brand@brand.lth.se)  
<http://www.brand.lth.se>

Telefon: 046 - 222 73 60  
Telefax: 046 - 222 46 12

Department of Fire Safety Engineering  
and Systems Safety  
Lund University  
P.O. Box 118  
SE-221 00 Lund  
Sweden

[brand@brand.lth.se](mailto:brand@brand.lth.se)  
<http://www.brand.lth.se/english>

Telephone: +46 46 222 73 60  
Fax: +46 46 222 46 12

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Lund, November 2013

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## Summary

In Botswana, approximately 40 percent of the population lives in rural areas and many depend solely on agriculture for their subsistence. Botswana has gone through a great urbanization period after the country's independence in 1966 and diamond discoveries in the 70s. The people who leave rural villages often do not go back due to lack of employment.

In northern Botswana the Okavango delta is located and the villages in that area are affected by floods on a regular basis. It has also been periods with severe drought and, as late as this year, Botswana was declared drought-stricken. The area is also affected by the wildlife such as elephants and lions. All these hazards can become a disaster because the people in the villages are vulnerable. The consequence often is a bad harvest and loss of cattle with devastating consequences for the families in the villages. Wildlife can also be dangerous for people, because the animals can attack.

The study began with literature studies regarding interview technique and grounded theory. This is done because the study is based on the method of grounded theory and interviews with the people in the village Tubu in the north-west district in Botswana. Because the study is based on grounded theory no theoretical framework is created before the data collection. This because the researchers should have as few preconceptions as possible when it is time to do interviews. The theory of why women and men live in high risk area should emerge over time. The report has one research question and that is *Why do men and women live in the high-risk rural area of Tubu, Botswana?*. To answer the question the interviews are transcribed and codes are formed to concepts and categories. The result from the research is four categories which are:

- *Livelihood*. People must have something to live off and this is an important reason for staying in Tubu or choosing a place to live. It can be that person own land where they can grow crops or that the area is good for rearing cattle. It can also be cash-based employments and many respondents expressed the desire for more employment in Tubu.
- *Belonging*. For the respondents in Tubu it was very important with a feeling of belonging. It can be that the respondent's family live in Tubu or that their wife/husband is from Tubu. Family is a big part of the respondent's life and it is often a reason for staying in Tubu, the bonds they have with their families' do that they want to help each other.
- *Services*. Some respondents expressed that the school was a reason for staying in Tubu where their children can get education, and many expressed the school and clinic as advantages hence something they value. On the other hand they talked about that the facilities in Tubu are too few and that they often have to go to Gumare for various causes because the services provided in Tubu were not enough.
- *Nowhere to go*. Some respondents who did not have any reasons for staying in Tubu or wanted to leave to start a life in a different place, had the opinion that there is nowhere for them to go. The life somewhere else would probably be more difficult than in Tubu.

Why people live in high-risk areas is a very complex question and not easy to answer. And the result in this study is based on interviews with the respondents in Tubu, Botswana. But it is assumed that the result can be applied on villages in a similar situation, especially in Botswana and southern Africa.

## Sammanfattning

I Botswana lever ungefär 40 procent av befolkningen på landsbygden och många lever på jordbruk. Det har skett en stor urbanisering i Botswana sedan de blev självständiga 1966 och diamantfynden på 70-talet. Personer lämnar ofta byarna på grund av arbetsbrist och återvänder sällan.

Okavango Deltat i norra Botswana är regelbundet påverkat av översvämningar. Botswana är i perioder även utsatt för svår torka och så sent som i år förklarades hela landet torkdrabbat. Norra Botswana har även vilda djur som exempelvis elefanter och lejon, vilka kan orsaka problem för byarna. Dessa påfrestningar kan orsaka en katastrof i byarna eftersom personerna där är sårbara gentemot dessa. Konsekvenserna blir ofta minskad skörd och förlorad boskap vilket kan vara förödande för familjer i byarna. De vilda djuren kan också vara en direkt fara för invånarna.

Studien startade med en litteraturstudie angående intervjuteknik och grounded theory eftersom studien baseras på detta. Intervjuerna utfördes i byn Tubu i nordvästra Botswana. På grund av att studien är baserad på grounded theory skapas inget teoretiskt ramverk innan datainsamlingen. Detta eftersom forskarna ska hålla ett öppet sinne med få förutfattade meningar inför intervjuerna och teorin skall utvecklas under tiden. Rapporten svarar på en forskningsfråga och den är *Varför bor män och kvinnor i högriskområden på landsbygden i Tubu, Botswana?*. För att svara på frågan kodades intervjuerna och koncept och kategorier bildades.

Resultatet från studien resulterade i fyra kategorier:

- *Försörjning*. Människor behöver något att överleva på och försörjningen är en viktig orsak stanna eller välja en plats att bo. Exempelvis kan det vara att en person äger en bit mark där de kan odla eller föda upp boskap. Det kan också vara pengabaserad inkomst och många av respondenterna i Tubu uttryckte att de ville ha mer arbete i Tubu.
- *Tillhörighet*. För respondenterna i Tubu var det väldigt viktigt att känna tillhörighet. Det kan exempelvis vara att familjen bor i Tubu eller att mannen/frun är från Tubu. Familjen är en stor del i respondenternas liv och var ofta en anledning för att stanna i Tubu. Detta eftersom de vill kunna hjälpa varandra.
- *Service*. En del av respondenterna uttryckte uppskattning för skolan och att det var en anledning att stanna. Flera pratade om fördelarna med skolan och även hälsokliniken. Samtidigt pratade de även om att det är för få faciliteter i Tubu och att de ofta måste åka till Gumare för olika saker på grund av att den service som finns i Tubu inte är tillräcklig.
- *Ingenstans att ta vägen*. Respondenterna som inte såg några orsaker att stanna och vill lämna Tubu för att starta ett liv på en annan plats hade ibland åsikten att de inte hade någonstans att ta vägen. De ser ingen väg ut för tillfället men uttryckte en stark vilja att lämna.

Frågan varför män och kvinnor bor i högriskområden är väldigt komplex, bland annat då situationen ser annorlunda ut på olika platser. Denna studie svarar på frågan utifrån intervjuer med respondenter i Tubu, Botswana, vilket är viktigt att ha i åtanke. Men antagande görs om att den är applicerbar för byar i liknande situation, speciellt i Botswana och södra Afrika.

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# 1 Introduction

This master thesis is the final part of the MSc in Risk Management and Safety Engineering at the Faculty of Engineering, Lund University, and is based on a study of why people live in a high-risk area in Botswana. Data were collected during eight weeks of fieldwork in Botswana, supported by a Minor Field Study scholarship from SIDA. More precisely in Tubu, which is a village near the Okavango Delta in the North-West district of Botswana.

## 1.1 Background

Already in 1984 Gunnar Hagman wrote:

*“It is like trying to bandage a wound that is constantly growing – frustrating indeed!”*

What he meant was that the number of disasters appears to be increasing and in spite of all efforts to help people with relief assistance, the aid is not enough. Disasters occur regularly in many countries, but these natural phenomena are not disasters in themselves. According to Hagman (1984) disasters occur only when people are exposed and vulnerable to these natural phenomena.

Still in 2013 the reality is similar. Over the last 30 years increasing numbers of people have been affected by disasters, above all the world’s poor. Lack of disaster risk reduction strategies, poorly build houses and high levels of poverty are elements increasing the impact of hazards (IFRC, 2012). In addition, health is a major problem for poor individuals and households. There are reports that Malaria is killing 600 000 people every year and one child is killed every minute (WHO, 2012). These types of hazards mostly affect people with low income and at least 70 percent of the world’s poorest people live in rural areas (IFAD, 2011). There is a preconceived idea that people live in hazardous areas only because they do not know better or have no other choice, but that may not be a viable explanation in practice. The importance of understanding why people live in hazardous areas was significant 30 years ago and is perhaps even more significant today, with the number of vulnerable people generally increasing.

Previous studies have shown that risk perception differ between men and women. Women tend to estimate risk higher than men and are often more worried. Most differences have been found when the individual is the target and not the community. In general women ask for more information about a risk than men do. Women also tend to be more contented with different risk mitigating measures and think they are necessary actions (Enander, 2005). Gustafson (1998) writes in his report that not only can the same risk be perceived differently but men and women can perceive different risks and they can have different conception about the same risk. He also argues that the general explanations for why women are more concerned about risks than men have limitations. It is better to explain the differences from a situational perspective; that risk perception is related to activities and social interaction. Different living conditions for men and women influence their risk perception but also how different living conditions reflects the power relations between men and women should not be forgotten. Gustafson’s (1998) example on that is women’s fear of crime, which mainly is fear of male sexual violence. He points out that more research must be done to create a better understanding for gender differences in risk perception.

Almost half of the population in Botswana is estimated to live on less than two US dollar a day (2009) despite that Botswana is classified as a middle-income country by United Nations, UN. Half of the adult population is employed in agriculture, although agriculture represents only a small fraction of Botswana’s Gross Domestic Product, GDP, with diamonds generating most of the income (UI, 2012). Since a great part of the population in Botswana still lives in

rural areas and is affected by floods, droughts and other risks, the understanding of why people live in high-risk areas is important.

The Botswana Red Cross Society has a coordinated programs that include disaster risk reduction (Botswana Red Cross, 2012) and this research will hopefully provide them with information that can be useful when implementing similar activities in the future. This study is also part of a larger research project aiming at learning about why people live in high-risk locations more generally, through comparison between different contexts around the world.

## 1.2 Purpose and research questions

The purpose of this research is to increase the understanding of why women and men live in high-risk rural areas. The purpose intends to be fulfilled by doing a study in Tubu, Botswana, which should answer the research question:

- Why do men and women live in the high-risk rural area of Tubu, Botswana?

To answer this question it is essential to create a theory around people's risk perception and how it differs between men and women. The authors can only answer the question based on the data collected from the respondents interviewed in Tubu, but the purpose is that the results can be applied on communities in a similar situation as Tubu.

In addition, the results from this research are going to be used in a broader context as a similar study has been conducted in Senegal. The reports can be seen as snapshots from different parts of the world.

## 1.3 Limitations

A limitation, due to the time restriction, is how many interviews that can be done. The authors had 8 weeks in Botswana and enough interviews have to be done to reach theoretical saturation. At the same time the quality of the interviews cannot suffer. To minimize the risk of not having enough of time to reach theoretical saturation the field study takes place in one village in Botswana and one aim is chosen, differences in risk perception between men and women.

The report focuses on how people perceive risks and do not address the reasons why they perceive it a certain way.

## 2 Methodology

Since this research can be seen as a snapshot and the results are therefore to be compared with the results from other similar researches, the study is preferable based on the same method. A research made in Senegal by students from the faculty of Engineering in Lund was conducted with a qualitative approach based on the grounded theory; this is one of the reasons why it is used in this research. According to this method, little knowledge is to be obtained before the study to avoid preconceptions. Therefore only literature studies about the principles of the grounded theory, how to conduct interviews and other necessary background information about Botswana was obtained.

In addition grounded theory is chosen because not many similar researches have been done in Botswana, hence little is known about the subject studied. Grounded theory is preferred when the authors want to collect data with an open mind and little is known about the subject studied. The authors' want to develop a theory from the collected data and it should be based on the respondents' answers not on the researchers' preconceptions.

### 2.1 Grounded theory

The Grounded theory is a qualitative methodology involving the discovery of theory through the analysis of data. The first step is data collection, from the collected data, theories can be constructed. Data analyzing and data collection are simultaneous, gathering additional data will presumably lead to an update and reevaluation of the developing theory. The grounded theory method is based on Barney Glaser and Anselm Strauss studies of patients dying in hospitals, performed in 1967 (Oktay, 2012).

At first data is collected, data is phenomena about people's actions and relations, what people do and not do. The data is then placed under situational and social context which will help the researchers develop a certain sensibility for which data is of significance. The coding phase is the first analytical step in the grounded theory method. Coding is when the data is described with simple words to convey meaning. Written data from memos or field notes are conceptualized line by line. The researchers should code everything in the beginning of the study, even if it seems irrelevant. Codes can then, in a second step, be grouped into bigger concepts and categories. Concepts are defined as underlying meaning and/or the pattern that can be featured from the data. When several concepts can be grouped together categories are created. The sampling should stop when theoretical saturation is succeeded. This means that no new data are being found from which properties of the categories can be developed; this analysis forms the foundation of the theory. The goal of developing theory is always present in the researchers' mind in grounded theory, even in the early stages of coding (Hartman, 2001; Oktay, 2013). Figure 1 describes the development of theory when using grounded theory.



**Figure 1. Development of theory using grounded theory.**

The use of memos throughout the study is a central part in grounded theory. Memos provide a bank of ideas and help to find the theory. Memos are ideas that the researchers get when gathering data. A memo can be a few lines to whole pages (Goulding, 2002).

The sampling framework should not be determined in advance but possible to revise throughout the study. To do so would risk the sample to not be able to further the development of the emerging theory. Instead continuous comparison between studied groups reveals where most relevant data is accessible and more focus can be put on these groups. This is called theoretical sampling, which is grounded on data and makes the sampling more effective and controllable (Hartman, 2001). For the development and refinement of a theory grounded in data theoretical sampling is essential (Breckenridge & Jones, 2009).

A grounded theory is different from traditional deductive methodology in that using the grounded theory the issue and hypothesis is not formulated before data is collected. According to grounded theory the problem should not be formulated because this will impose on what data is collected. Instead this qualitative approach starts with collecting data and then generates a theory as the study evolves (Hartman, 2001). The methodology is preferred because little or nothing is known about why people choose to live in high risk areas, it also allow the authors to explore the situation from a wide perspective.

A risk with grounded theory is that the researchers must stay open-minded, be flexible and gather much data before the theory starts to make sense. It is often here problems occur because the researchers give up or create a theory on inadequate data. It is important to be prepared for that the theory not automatically will emerge; sometimes there is no theory to be found. The study should continue until saturation is reached (Goulding, 2002). As mentioned earlier the authors for this master thesis have 8 weeks in the field which can become a source of error due to limited time to do enough interviews.

## 2.2 Data collection

To collect data the authors will do interviews with people who live in a high risk rural area in Botswana, more precisely in Tubu. To find out how the interview should be structured a literature study was done in the subject. In this chapter the authors describe different strategies to collect data with interviews and how and why it is done in a certain way in this report.

### 2.2.1 Interview structure

Interview structures range from structured, semi-structured to unstructured. Structured interviews means that all questions are prepared and the answers are put in categories, the same questions asked can be used in a questionnaire. The semi-structured interview means that there is a certain degree of standardization of interview questions, and a certain degree of openness of response by the interviewer. The unstructured interview is totally open and the questions depend to some extent on the interviewee's answers (Wengraf, 2001).

According to Wengraf (2001) building a theory of a reality requires an unstructured or semi-structured interview. Grounded theory builds on that the researchers should keep an open mind and try not to affect the respondents' answers. Structured interviews do not allow an open dialog with the respondents and is therefore not used. Since the authors want to study men' and women's risk perception and collect data on why they live in Tubu but on the same time allow an open dialog to gather as much information as possible the semi structured interview is used. The semi-structured interview has a lot of the qualities of an unstructured interview but uses an interview guide as aid. This creates an opportunity to collect data from the respondents using the same questions which gives certain rigidity to the research but the method also paves for wide and information-rich answers. The interviewer is allowed to

change the order of the questions during the interview and also decide which part to investigate in greater depth depending on the development of the interview (Corbetta, 2003). The semi structured interview is also less time-consuming than an unstructured interview, because the authors only have a limited time to conduct the interviews and the respondents also have limited time to take part in the interviews it is better to use the semi-structured interview because it would take longer time to collect useful data with an unstructured interview.

As mentioned there are many strengths with the semi structured interview, however the interviewer's role is of highest importance for a successful interview. It is the interviewer's job to gain access to the thoughts of the interviewee which determines the outcome of the interview (Corbetta, 2003). A novice researcher might not be able to know where to ask prompt questions or probe responses, which could do that relevant data are lost (Doody & Noonan, 2013). In addition it is also of importance that the interviewer establishes a relationship of trust with the interviewee, otherwise might not the interviewees answer the questions honestly (Doody & Noonan, 2013).

Closed interview questions that can be answered with a simple yes or no should be avoided in the interview-guide. Instead the interview method uses open questions that often start with the words like *what? why? how?* The questions should open for follow-up questions that are prepared. According to Dearnley (2005) open-ended questions encourage depth and vitality which will help new concepts to emerge. Dual questions should be avoided because the interviewee can then choose which question to answer and important information may be lost. Leading questions should also be avoided in order not to influence the respondent's answers and get results that reflects the interviewer's hypothesis (Häger, 2007).

### 2.2.2 Interview techniques

The qualitative interview does involve interaction between two individuals and is therefore not only about recording information. There are many different ways to conduct an interview, to get as much information as possible from the interviewee it is important to think over the interview technique and interview structure. The interviews that were conducted in Botswana are with lay-people and therefore have the authors for this thesis focused on an interview technique for that purpose.

According to Häger (2007), the most important thing when interviewing lay-people is to create trust. This is also something Corbetta (2003) emphasizes to be able to gain access to the interviewee's thoughts. Preferably start the interview with questions that are easy to answer and then move onto more difficult or sensitive questions (Doody & Noonan, 2013). When you have made acquaintance and a feeling of trust has developed the interview can accordingly start with the "real" questions. During the interview Doody & Noonan (2013) mentions that it is important that the interviewer maintain eye contact, show empathy and listen actively.

Knowledge is important when you interview, knowledge about the topic creates a bigger trust for you. The tone of voice is important during an interview, a soft and friendly tone is better than an aggressive tone. You should point out that the interviewer's purpose is to gather information for a good purpose and that the person interviewed is anonymous (Häger, 2007).

It is according to Häger (2007) important to show that you are listening. You can show that you are listening by nodding and give small confirmatory comments for example *mmm, I understand* and *do tell more*. The interviewee should feel important and in center during the interview (Häger, 2007). This is also important to enable a greater understanding of interesting or important points in the respondent's answers. Using probes or prompts is a way of clarifying a participant's response to a question using focused follow up questions (Doody

& Noonan, 2013). This will help getting the interviewee to talk without influencing on the answers and also hopefully help the interviewee to lower his or her defensive barriers (Corbetta, 2003).

### 2.3 Sensitive Subjects

The authors of this report are aware of the possibility that respondents may talk about sensitive subjects during the interview. It can be about various crimes they might have seen or been exposed to. How to deal with this will depend on each case. But if the person reaches for help and the situation is unsustainable the authors will get in touch with the commission office at the end of the field study. This so the social worker in the village can help.

### 2.4 Selection of respondents

As described above the goal of grounded theory is to develop a theory that is useful in situations similar to the one which the theory was generated. The theory generated should therefore work in similar situations (Oktay, 2012). The studied population was restricted to living in Tubu, Botswana. Since it is not possible to interview the entire population, a smaller sample from each of the population groups was interviewed. The researchers want to find possible differences between men's and women's risk perception, hence an equal number of male and female respondents in each category are preferably selected. This together with the use of grounded theory where a theory is developed during the process and the sample size should be possible to revise throughout the study the sampling cannot be done randomly. In addition because there was no registration of inhabitants in Tubu it would have been impossible to do random sampling. The selection of respondents should reflect the population to enable the opportunity to generalize the result from the smaller sample to the population. So instead another method for selection of respondents was used, called standard quota sampling which is a non-probability sampling.

The population is divided into groups by age, gender etcetera depending on criteria decided by the researchers. The number of selected respondents for every group is based on specified proportions (Terhanian & Bremer, 2012). Consequently the quota sampling does not allow general conclusions about the population to be withdrawn, but instead it increases the understanding of the subject studied since the researchers purposefully can choose individuals, groups and settings for this phase (Onwuegbuzie & Leech, 2007). Because there is no proper registration of inhabitants in Tubu, the selection of respondents could not be made to reflect the population in Tubu exactly. Instead the researchers assume that the demographics of Botswana can be applied on Tubu, meaning that the quotas for each age group should be as proportional as possible to the distribution of the population. According to data from 2013, 33 % of the population of Botswana was between the age 0-14, 22 percent between 15-24, 37 percent between 25-54, 4 percent between 55-65 and 4 percent over 65 (CIA, 2013). The different age groups used in this report are 18-30, 31-40 and 41+. With the prevalence of the population in Botswana in mind, the distribution chosen was around 33 percent for each group.

### 2.5 Research process

When the authors arrived to Botswana the first step was to get the research permit from the Office of President. It had to be done at site because of problems to get the permit when the authors were in Sweden due to communication problems. Fortunately the permit did not take long time to get, only two days. The next step was to select a village for the field study. The authors realized they did not have the possibility to hire a car because of high prizes and restricted budget which reduced the number of possible villages to do the field study in. The authors discussed different options with people working for the National Disaster

Management Office and the Swedish Civil Contingencies Agency, MSB, in Gaborone. It was decided that the collection of data should be done around Okavango Delta because villages in that area are affected by floods which creates problems for the people living there. The first plan was to live in Maun and do the field study in a village nearby, but because of the car problem and that people in the nearest village to Maun had been educated about risk the plan had to be changed. The decision instead landed on that the authors would live in Gumare, which is a town that has some infrastructure in form of convenience stores and public transport to bigger towns like Maun. Gumare was also close to some of the villages that had been affected by floods.

The next step was to go to Gumare and talk with the people at the Rural Administration Centre, RAC, because they have good knowledge about the surrounding villages. After that the choice was between two villages, one 50 kilometers and one 10 kilometers from Gumare. The road to the village close to Gumare was in a bad condition and 10 kilometers took around 40 minutes to drive. Because of this the village closest to Gumare was prior one. A person from RAC introduced the authors to the chief in the nearest village and when he approved that the research could be conducted there and confirmed that the village had been affected by floods previous years, the choice was done.

The next problem was to find accommodation in Gumare and also a taxi driver that could drive to Tubu every day. In Gumare it was difficult to find an apartment or a house to rent so the authors decided to stay at a guesthouse in the town and the authors hired a taxi driver to drive the authors to Tubu every day. When the practicalities had been taken care of the interviews could start and how that was done is described in next chapter.

### 2.5.1 The interviews

The population of Tubu have limited or no knowledge in English wherefore an interpreter had to be used. The researchers chose a person working in Tubu with good knowledge in English and Setswana who was introduced at the first meeting with the chief of the village. Since the chief of the village had to approve that the interviews could be conducted in Tubu, the choice of interpreter was also taken due to that the chief of the village introduced the interpreter. Using an interpreter from the village made it easy to find respondents willing to take part in the interviews. This means that selection of respondents was partly given to our interpreter who asked people if they wanted to take part in the interviews, but the researchers decided which age group and gender the person should be part of, and tried to cover the different categories from the quota sampling as well as possible. It is important to point out that the interpreter did not look for some people specific. Instead the authors and the interpreter walk around randomly in the village and asked people.

The people interviewed are anonymous in this report. Every person is given a number and only the researchers know which number belongs to which interviewed person; this means that the names of the interviewees will never be published. This to ensure the safety and integrity of the respondents. The anonymity in this report does therefore ensure that no one can find the interviewed person afterwards for any reasons. The interviews will not be published intact in the report, only the results from the interviews will be presented and important citations picked from specific interviews.

The first day four test interviews were conducted partly to evaluate the performance of the interpreter and mitigate any alternations in the translation. Before the first interviews useful information was given to the interpreter ensuring he understood the aim and goal of the research and the questions going to be asked. Since the interpreter was inexperienced and did not have education in grounded theory or how to conduct semi-structured interviews; this will



probably affect the quality of the research. The interviews were conducted with a consecutive interpretation which means only one was speaking at one time. After the first interviews the researchers could clarify that the interpreter was serious which is important to ensure serious answers from the interviewees. The interpreter did no remarks that any questions were unnecessary or poor or in any other way reduced the importance of any questions which could have an impact on the interviewee's answers.

After the first day it was discovered that the interviewees did not answer the question about dangers the way the authors wanted. Mostly they did not have much to say mainly because they were thinking too big. That is why the authors added one question to the interview-guide. "What are the risks regarding living in Tubu?" with this question added the interviewees covered more of the risks they were thinking of. The authors explained the differences between risks and dangers to our interpreter and he translated it to Setswana. Risk is something that can affect the daily life while danger have a greater impact. Sometimes the interviewees' answered the first question and had nothing to add about dangers, and sometimes the interviewees' had nothing to say about daily risks, but something to say about dangers. Most often the answers to the both questions were similar, but to ensure that they thought about what could affect them both questions were kept in the interview-guide. The question about risk also created a smooth transition before asking about dangers. The whole interview-guide is presented in appendix B.

The interviews took time mostly between 9 a.m. and 12 a.m. but also in the afternoons between 2 p.m. and 5 p.m. mostly because of the heat. No interviews were held later in the afternoon because of safety reasons. Most of the interviews took place on the weekdays but some interviews took place on the weekend. The respondents were found by walking around in the village and the people that were outside were asked by the interpreter if they wanted to be interviewed. The interpreter started with introducing us and describing the research and that it is for school. When the introduction was finished the interviews started. The first questions were supposed to cover how the life is in Tubu and what the respondents think of their lives. The next questions were constructed to gain more information about the risks and dangers that they thought affected their lives in Tubu. The interviews were conducted in privacy so that other people could not influence the answers of the interviewees. Sometimes people came that were interested in what was going on, but then the authors stopped the interview and asked them to leave. When all the interviews were done the authors had covered whole Tubu with respondents from all areas. The authors stopped interview when no new data were found, theoretical saturation were succeeded.

In the end the result is based on 21 men and 22 women and around 33 percent in age group 18-30 and 41+ and around 35 percent in age group 31-40. A list over the respondents are presented in appendix A. Beside the 43 interview that the result is based on four test interviews were done the first day.

### 2.5.2 Sources of bias and errors

When using an interpreter it is important to describe important and standardized information about the interpreter's background, competence and role, which has been described in chapter 2.5.1. It is also essential to consider any influences of the interpreter in the data collected (Norr & Shimpuku, 2012). The consequences of using an interpreter is that information might get lost in the translation. It was also difficult maintaining a conversation and this might have influenced the relationship between the author and the interviewee. It was noticed when interviewing participants that had knowledge in English that the conversation was more fluent and the connection between the authors and the interviewee felt stronger. Using an interpreter can therefore result in a mistrust and therefore loss of important information. In addition the

authors cannot know exactly what the respondents say and have to rely on that the interpreter translates all information. That important information might get lost can mean that the result is based on insufficient data. This can lead to that the result do not reflect the reality. A source of error in this report can also be that the interpreter works in Tubu and know some of the respondents. This can mean that respondents do not have the courage to talk about some subjects. Perhaps they are afraid that the interpreter will talk about it with the chief in the village. However the authors felt that most of the respondents did not hold in information when interviewed. The political situation in Tubu is stable which probably means that the people are not afraid of talking about the situation in the village and the life in Tubu. The authors' observation was that the respondents were open when talking about the life in general. But regardless of that they might have been afraid to talk about crimes and other sensitive subjects.

The people around 18 years old did not have much to say about risks or dangers, but they were interesting in that part that they could answer why they are staying in Tubu. Hence the respondents are included in the report. But this can be a source of error because the authors of the report cannot know if the young respondents did not want to talk about risk/dangers or if they actually did not perceive any risk/dangers.

Because the interviews were conducted during daytime, a source of error might be that no interviews were done with people that work outside of Tubu. This can lead to that the result only reflects people that do not work and they may have a different opinion on the situation in Tubu than the working people. To minimize this error some interviews were conducted on a weekend when people do not go to work. The researchers can be a source of error because every person have some preconceptions and the result is going to be after the author's framework. Since the authors are from Sweden the result can be reflected by this and the knowledge they have gained during their study in Lund. This can affect the result in a negative way because preconception may force a theory to emerge on insufficient data. To minimize this error the authors have to be prepared on changing their mind about a theory and not force a theory to emerge only because existing research say something.



### 3 Conceptual framework

This chapter focuses on different definitions that are used in the report. This to make it easier for the readers to follow the results and analysis. It is important to point out that this chapter is not a theoretical background or framework because when using grounded theory, the theory of the subject studied is generally integrated into the analysis. In grounded theory the researchers should instead have open minds and as few preconceptions as possible when starting the data collection.

#### 3.1 Risk

There is no commonly accepted definition of risk, but risk is partly about managing uncertainty of unwanted incidents in the future as well as it is about coping with hazards and fears (Davidsson et al., 2003). Renn (1998) defines risk as:

*“The possibility that human actions or events lead to consequences that have impacts on what humans value.”*

This part is based, unless otherwise stated, on a lecture held by Alexander Cedergren<sup>1</sup>, Department of Fire Safety Engineering and System Safety. The definitions mentioned do not account the differences that often are observed between experts and lay-people when it comes to risk perception, how some risks are accepted and others not. There are mainly two different perspectives on risk and they are:

- The technical perspective
- The social constructivist perspective

The technical perspective points out that risk is something that can be measured and that risk is objective. People that advocate the technical perspective think that risk assessments should be done by experts that master the methods. The point with risk assessments is to provide a basis for decision-making. The social constructivist perspective argues that there is no objective, real risk. Risk is something that has been created socially and it is reflected by culture, traditions and more. This perspective holds that risk cannot be described by probability and consequence and that risk assessments contains many assumptions and valuations.

Renn (1998) noted that many of them with a social constructivist approach and especially they who believe that risk is a socially constructed concept and not a measure of a real danger want to make the risk management process more democratic. He believes that the technical perspective has several drawbacks. For example that the technical perspective requires equal weight of the two components probability and consequence but the ratio has proven to be more complicated. People are often avoiding risk with low probability and high consequence more frequently than risks with high probability and moderate consequence. Compiled data for large populations over a long time may result in important individual differences and preferences are excluded (Renn, 1998). Therefore more work about how people perceive risk is necessary.

#### 3.2 Risk perception

Risk perception is about how people perceive risk, what they know about it, how they assess risk and cope with different risks (Davidsson et al., 2003). Different people perceive risk differently, for example gender, age and more have an impact on how people perceive risk

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<sup>1</sup> Alexander Cedergren, PhD student at the Department of Fire Safety Engineering and System Safety, LTH, lecture in VBR171 2013-03-20.

(Enander, 2005). Instead of empirical studies using quantitative methods that investigate risks that the researcher decides, more researches using qualitative methods should be conducted, with open-ended questions about risk which will enable people to tell what risks they perceive (Gustafson, 1998).

### 3.3 Disaster

The UN defines disaster as:

*“A serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope using only its own resources. Disasters are often classified according to their cause (natural or manmade).”*  
(DHA, 1992)

All disasters are consequences of hazards, small as big. Depending on community the capability to cope with hazards are diverse, thus must the consequences overwhelm the capacity of the community to cope with the hazard for the event to be considered disastrous (Pine, 2008).

The International Federation of Red Cross and Red Crescent Societies, IFRC, described disaster with:

*“A disaster occurs when a hazard impacts on vulnerable people.”* (IFRC 1, u.d.)

Despite efforts to reduce vulnerability to disasters, deaths, injuries and property losses still tends to increase. According to numerous studies, increasing losses is a result of, population growth in high hazard areas and weather and climate change, among others. In order to understand a community’s hazard potential, one must understand that it is influenced by socioeconomic indicators, individual characteristics and the community’s geographical context (Pine, 2008).

A disaster is according to Wisner et al. (2004) a hazard that impacts a significant number of vulnerable people that then suffer severe damage, and recovery is unlikely without external aid. Poverty is often associated with vulnerability but you can be vulnerable even if you are not poor (IFRC 2, u.d.). Vulnerability is central in understanding how communities can cope with disasters, vulnerability is the result of exposure to hazard and the capacity to deal and recover from it (Pine, 2008).

Boin & McConnell (2007) argue that it requires extensive studies of previous disasters which explain in detail how they were handled. In these studies it should be included how to best isolate a total breakdown of society. They argue that an effective response in the first hours after a disaster depends heavily on so-called first defendant, for example, operational staff. The authors of this thesis mean that not only are studies on previous disasters necessary; you also need to know what the hazards in a society are. It is also important to study how people perceive risks and what they do to great resilience against the risks.

## 4 Context for the study

Botswana became independent from Great Britain in 1966 as one of the world's poorest countries, but due to diamond deposits and a relatively stable political system it is today a middle-income country. Diamond deposits and the mining sector stand for almost all export earnings even though almost 50 percent of the population's livelihood is agriculture (UI, 2012).

The social and health sector is well developed, but still a lot of social problems are left. Botswana is one of the worst affected countries of HIV where almost 30 percent of the population is infected. Despite the government's investment in antiretroviral for all infected the epidemic still damage the economy as well as it causes great suffering. Between 2005 and 2009 about 80 percent of the infected got treatment which decreased the number of deaths with 50 percent (UI, 2012).

### 4.1 Tubu

Tubu is a small village in the Okavango Delta with approximately 600 inhabitants. Closest town Gumare is 10 kilometers from Tubu which has around 6000 inhabitants. Okavango is a sub-district of Ngamiland and a large inland delta in the northern parts of Botswana, see figure 2 and 3. Okavango is exposed to a number of hazards, primarily veldt fires, floods, epidemics, animal diseases and pest infestations. Mostly it is the climate and environmental changes that causes the floods. The population is increasing and therefore a number of people settle down on flood plains and are affected by floods (Disaster Management Committee).

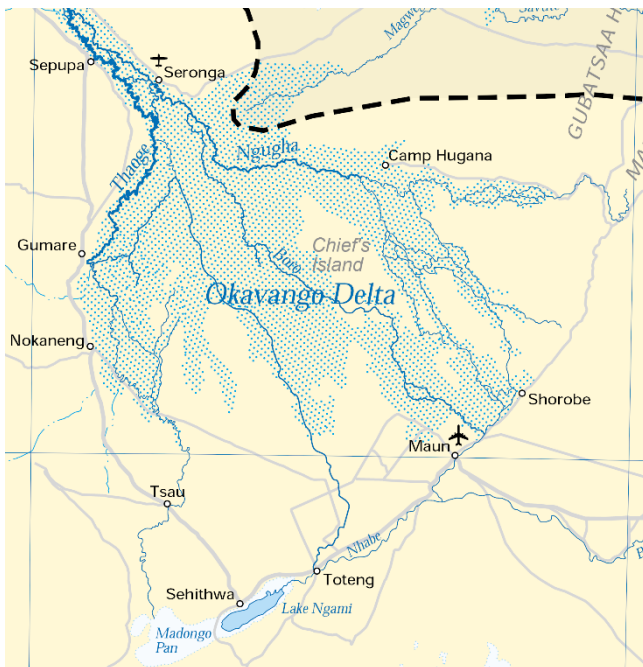


Figure 2. Map over Okavango Delta (University of Texas Libraries, 2013).

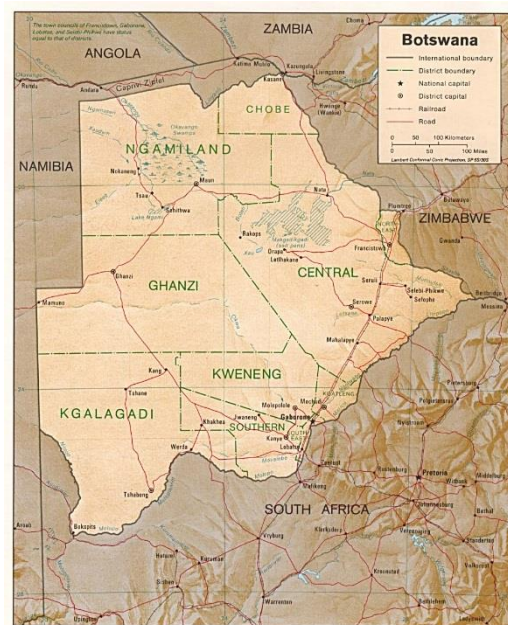


Figure 3. Map over Botswana (University of Texas Libraries, 2013).

The authors noticed there is no business in Tubu, meaning all shopping has to be made in Gumare, even though there is no public transportation between the two. This mean that people have to hitchhike, hence there are few that own a car. The people do not have running water in their houses instead they have some few places where they can get water. During the dry season the water may finish in Gumare and then people in Tubu need to take water from the delta or bore holes. The people in Tubu are generally poor and do not have a sustainable income besides their cattle. Almost all houses are made of mud and

they do not have electricity. Some households do have solar panels. Often several households share toilet, and it is a toilet without running water. The road between Tubu and Gumare is in bad condition and during the floods of 2010 it was more or less inaccessible. The people had to use canoes to cross the river, the government helped people getting to and from Tubu using a tractor (Modimooopelo, 2010).

Most of the people in rural areas, like Tubu, depend on agriculture and their income is mostly non-cash based. The bulk of wealth is in the form of livestock; especially cattle, but also goats and sheep. People in the rural areas survive by selling livestock, which means they may not have a lot in earned income. Traditionally it is the sons that become heir to their father's cattle; the women tend to own small stock, such as goats (Mogotsi, 2012).

This part is based, unless otherwise stated, on conversation with Elijah Mahuma<sup>2</sup>. There are ten people working with the administration in Tubu with the chief as head of the village, there is one primary school and one medical clinic. In case of more serious diseases or accidents the affected person needs to be brought either to the hospital in Gumare which is 10 kilometers from Tubu or Maun which is about 200 kilometers from Tubu.

## 4.2 Hazards

The people in Tubu are exposed to multiple hazards and in this chapter a discussion about which hazards the respondents have talked about or the authors have observed during the field study. The result from the interviews are presented in chapter 5.

### 4.2.1 Floods

Floods occur during the rainy periods mainly between October and March. In 1999/2000 there were some major floods which affected cities, villages in the entire country. Thirteen people lost their lives and 17000 structures were damaged which lead to displacement of thousands of people (DMO, 2004).

As late as in May 2010 many of the villages and settlements surrounding the Okavango Delta were affected by overflow of water, mainly because they are situated on low lands. Most of the residents were left homeless as their homes submerged completely. The water supply to the villages was unstable, except for certain villages that were supplied by boreholes. Nine villages supplied with water from water treatment plants at Sepopa and Mohembo East experienced water shortage due to the saturated water treatment plants. Approximately ten days after the flooding some of the villages were difficult to reach since they were surrounded by water and a number of farmers were stranded with their cattle in the bush. Whenever the floods approached they relocated their cattle to drier areas. This means that they lived in the open without shelter, risking their lives because they did not want to leave their cattle unattended. The floods continued to spread and threatened to cut the access road to more villages (Majaha, 2010).

The floods in Tubu in 2010 separated the school and health clinic from the rest of the village and there were no possibilities to cross the river. The government decided to set up temporary tents where the children could get education during this period. After the floods a bridge was built to enable the children to cross the river in case of new floods (Majaha, 2010).

### 4.2.2 HIV/AIDS

Human Immunodeficiency Virus, HIV, weakens infected people's defense system to different infections and some types of cancer. The virus targets the immune system and destroys and damages the function of immune cells. The disease has different stages and the immune

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<sup>2</sup> Elijah Mahuma, Community council, Tubu, 2013-09-23-2013-10-25.

system is gradually destroyed. The most advanced stage of HIV is Acquired Immunodeficiency Syndrome, AIDS, and is defined by that people develop some types of cancers or infections. Depending on the individual that is affected it can take 2 to 15 years to develop AIDS (WHO, 2013).

Botswana has one of the highest prevalence of HIV in the world, only Swaziland has higher. The first case of HIV/AIDS in Botswana was reported in 1985 and in 2011 the prevalence in the country was 23.4 percent among adults aged between 15 and 49. The Government in Botswana offers free medication to almost all citizens. This means that infected people can live a longer and healthier lives (UNAIDS, u.d.; Beaubien, 2012; DHAPC 1, u.d.).

Despite the efforts to reduce the prevalence of HIV/AIDS Botswana remains challenged by the epidemic. In 2008 17.6 percent of the population over the age 18 months were HIV infected compared to 17.1 percent in 2004. Tubu is part of Ngamiland and the district has one of the highest incidence rate in the country (National AIDS Coordinating Agency, 2012; Government of Botswana & Central Statistics Office, 2009). The authors of this report have during their stay in Gumare noted that it is common with teenage pregnancy and that families often have many children. This is a sign of that many people have unprotected sex. The HIV treatment program has resulted in a reduction of cases when fetuses and newborn children are infected by their mother (Beaubien, 2012). And among the new infected the majority are adults over 15 years old (National AIDS Coordinating Agency, 2012). A problem is that the condom use is not accepted in all societies because it is said to encourage sex (DHAPC 2, 2012).

#### 4.2.3 Drought

Droughts happen occasionally, in the 1980s there were major droughts. Drought leads to adverse effects on agriculture, wildlife and other natural resources. Lives of people are also in danger, as well as private property (DMO, 2004). This year the whole Botswana is declared as drought-stricken. The rainfall was far below normal and the rain has been poorly distributed. It has also been long periods of drought and very high temperature. Drought leads to adverse effects on agriculture with bad harvest and difficulties finding grazing land for the cattle. The southern part of the country is worst affected but also the areas around Okavango Delta is badly stricken by the drought. The drought affect the livelihood for the population and people living on agriculture feel loss of income. Also the nutrition status among the population is threatened (Republic of Botswana, 2013; Ontebetse, 2013).

The drought relief program is a result of drought, the rural population are given employment opportunities, three months a year, to assist combating the drought. This is an attempt to boost the income of the rural poor (Mogotsi, 2012).

#### 4.2.4 Veldt fire

Veldt fires are one of the prevalent disasters in the area because of the vegetation type in the district. During dry months of April to November veldt fires occasionally occur which lead to adverse effects on agriculture, wildlife and other natural resources. Lives of people are also in danger, as well as private property (DMO, 2004).

The field study was threatened by a veldt fire at one time. This because of an existing veldt fire near Gumare and the authors had to think of how safe it was to stay in Gumare. Fortunately the wind was in the direction away from Gumare the whole time the field study took place and people at RAC were updating the authors on a regular basis.



#### 4.2.5 Wildlife

Botswana has a big population of wildlife such as lions, elephants, buffalos and many more, wildlife is a big part of the northern part of Botswana. In the rivers in Okavango delta there is a big population of crocodiles and hippopotamuses. The wildlife contributes to the tourism and the ecosystem but on a local level it causes problem. There is a risk in Botswana with wildlife when people move around in the bush or outside when it is dark. The biggest population of elephants exist in Botswana with around 200 000 elephants (Mfila, 2013; Botswana Tourism Organisation, u.d.).

In 1994 the government in Botswana introduced a compensation for damages caused by wildlife on properties. Then you could get compensation for damages caused by any kind of animals but in 1996 the government set a limit to those animals listed as dangerous. Now the listed animals are lion, leopard, hippopotamus, rhinoceros, elephant, buffalo, crocodile, wild dogs and cheetah (DWNP, u.d.).

#### 4.2.6 Foot and mouth disease

The foot and mouth disease, FMD, is an infectious disease that affects cloven-hoofed animals. FMD spreads rapidly and causes fever, blisters in the mouth and on the cloves. It is unusual that FMD is fatal for adult animals but it often causes significant loss of production. For example the animal can become lame and the disease can cause reduced milk yield. Among the younger animal, FMD can be fatal in large scale (DEFRA, 2013).

The government of Botswana has done some efforts to control FMD and an important one is the cordon fence. The fence separates the cattle from wildlife, especially the African buffalo. This has been successful because the African buffalo is a major transmitter of FMD (Admin & Penrith, 2008). If it has been successful it can be discussed because many people the authors talked to did not see any improvements regarding foot and mouth disease.

## 5 Result

The result is divided into two sub questions that in the discussion are linked together to answer the research question. The sub-questions are:

- Why do people stay in Tubu?
- What is the respondents' risk perception and are there any differences between men and women?

The result is presented like this to get a more holistic approach on the respondents' lives in Tubu to be able to know why people live in the high risk area of Tubu. As figure 1 in chapter 2.1 shows, the study started with data collection in form of interviews and then the collected data were coded into concepts and categories. The analysis of the data was done throughout the study and the interviews were coded each day before new interviews were conducted. The four categories presented in chapter 5.1 emerged during the process of the study. These categories linked together with men' and women's risk perception, which is presented in chapter 5.2, answer the research question *Why do men and women live in the high-risk rural area of Tubu, Botswana?*. Any differences in the result between men and women have been noted throughout this chapter.

### 5.1 Why do people stay in Tubu?

The result on this sub-question is four different categories *livelihood, belonging, services and nowhere to go*. The categories presented in this chapter are also the end result, which together with knowledge about men's and women's risk perception the authors can answer the research question.

Many of the respondents expressed a desire to move away from Tubu to start a life elsewhere. Some want to leave temporarily to look for employment, others to get education and some want to create a life for their family in town. Regardless what they want to do the common denominator is that life in Tubu is hard and many suffer. Only one respondent mentioned she is staying because life in Tubu is good. Some older respondents, over 40, mentioned they are staying in Tubu because the lifestyle is okay.

#### 5.1.1 Livelihood

Table 1 shows the main concepts included in the category livelihood. The concept agriculture includes codes like *rearing cattle, growing crops, farming and soil is fertile*. Hunt and gathering includes codes like *collect food, fishing, palm tree and food from the delta*. Drought relief program includes code like *it is good with drought relief program and government provides us with employment*. Inexpensive life includes codes like *life is cheap; you do not need money and do not live by buying*.

**Table 1. Main concepts in the category livelihood.**

Nr.	Age	Sex	Agriculture	Hunt and gathering	Drought relief program	Inexpensive life
4	18-30	Men	X		X	
15	18-30	Men	X		X	
25	18-30	Men	X	X	X	
27	18-30	Men		X		X
34	18-30	Men	X		X	X
38	18-30	Men	X	X		
17	18-30	Women	X	X		
22	18-30	Women	X			
24	18-30	Women			X	
36	18-30	Women	X	X	X	X
1	31-40	Men	X			
14	31-40	Men	X			
39	31-40	Men	X	X		X
40	31-40	Men	X	X		X
41	31-40	Men	X		X	
42	31-40	Men	X			X
3	31-40	Women		X	X	X
10	31-40	Women	X		X	
12	31-40	Women	X			
13	31-40	Women	X		X	
31	31-40	Women				X
32	31-40	Women	X			
33	31-40	Women	X	X		
2	41+	Men	X	X		
11	41+	Men	X		X	
16	41+	Men	X			
26	41+	Men		X		X
28	41+	Men	X	X		
29	41+	Men	X	X		
35	41+	Men	X	X		
5	41+	Women	X	X	X	
6	41+	Women	X	X	X	
9	41+	Women	X	X	X	X
21	41+	Women	X		X	
30	41+	Women		X		X
<b>Sum</b>			29	18	15	11

It was almost an equal number of men and women that mentioned agriculture as a reason for staying. Many respondents talked about the advantages with doing agriculture in Tubu because the soil is more fertile compared to other places which facilitates harvesting and rearing cattle. As a 25 year old man said (nr. 15):

*“Tubu is good for plowing and taking care of livestock compared to the other side of the river. When we plow we get bigger crops because the soil is fertile here.”*

And another 33 year old man said (nr. 42):

*“...we have good grazing land for our cattle where they can eat.”*

It was also an equal number men and women that talked about hunt and gathering. The men talked more about fishing and women more about collecting food from the delta or the bush. Many respondents work on the drought relief program and people talked about that it can be helpful. On the drought relief program the respondents' work three months a year; the money they get from this is important. As a man said (nr. 41):

*“Maybe I can get employed by the drought relief program and get some money so that I can look after my family.”*

The respondents also talked about many advantages and disadvantages regarding the livelihood in Tubu. Many respondents compared the life in Tubu with the life in town, where you need money to survive. The income for the respondents in Tubu is mainly non-cash based because they do agriculture, but also because they are not allowed to sell their cattle because of foot and mouth disease and there are no jobs in Tubu. Their cattle is normally their cash-based income. It was mainly the male respondents who talked about that they cannot support their family, for example ensuring education for their children. Since they do not have much money the respondents talked about the advantages with the cheap lifestyle. It is possible to collect food from the surroundings, such as wild fruits, water lilies and other things that are possible to eat. The palm tree is not only good to eat but some of the respondents also did handicrafts from the leaves which they could sell. It is clear that they value the possibility to live off what nature brings.

Like an 18 year old man said (nr.25):

*“The lifestyle in Tubu is okay because it is not difficult and I can do anything I want without money. In Gumare I need money to do things”*

And another 28 year old man also talked about this (nr. 34):

*“It is a cheap lifestyle in Tubu. The things we do are simple for example we build our own houses from local products, we only buy the doors for the houses. Then we have our own food like fish and water lilies. Also we can use our own donkeys or horses to go to Gumare.”*

The respondents value the cheap lifestyle but talked about how life would be better if there were more jobs in Tubu, 20/43 respondents talked about the disadvantages with *lack of employment*. The most common reason for leaving was to go and look for employment or get education. Mainly the respondents wanted another lifestyle than the one they had in Tubu and to seek new economic opportunities. Some respondents had tried to leave Tubu but returned because they thought the life in town was too hard and too expensive, most of the times they could not find jobs or finish the education. But also people came back because they missed their families, see category *belonging* chapter 5.1.2. Even though many respondents over 41 talked about that there is nowhere to go, see chapter 5.1.4, some of them talked about that it is normal to leave Tubu for a short period of time to find temporary jobs to raise some money, but they would always come back to Tubu when the work is finished. If there was more employment in Tubu the respondents said they would get a better life. As a 56 year old man said (nr. 16):

*“If there was enough employment we would work and buy everything we want for ourselves.”*

And an 18 year old woman said (nr.19):

*“I want to go to Gaborone and get an education; I tried it one time but failed. I want to try again, my lifestyle is better in Gaborone.”*

As said the respondents wanted more employment to Tubu, a more developed Tubu with more business. Some respondents talked about that the future will bring more jobs to Tubu, but only one respondent talked about actually doing something himself by starting more business, a 28 year old man (nr. 34) talked about increasing his farming to 16 hectares. He said:

*“We may leave to look for employment. But now I want to develop something in Tubu, if I have 16 hectare it would create jobs for people in Tubu.”*

#### 5.1.2 Belonging

Table 2 shows the main concepts included in the category belonging. In the concept grow up in Tubu codes like *grew up here, born here* and *lived all my life in Tubu* are included. In family codes like *parents are here, relatives are here* and *wife/husband is here* are included. In the concept used to the life codes like *so used to the lifestyle* and *cannot think of another lifestyle* are included.

**Table 2. Main concepts in the category belonging.**

Nr.	Age	Sex	Grew up in Tubu	Family	Used to the life
4	18-30	Men	X	X	
20	18-30	Men	X	X	X
25	18-30	Men		X	
27	18-30	Men	X	X	X
34	18-30	Men		X	
38	18-30	Men	X		
17	18-30	Women	X		
18	18-30	Women	X		
19	18-30	Women		X	
23	18-30	Women		X	
24	18-30	Women	X		X
39	31-40	Men	X	X	X
40	31-40	Men	X	X	
42	31-40	Men	X		
3	31-40	Women	X	X	
7	31-40	Women	X		X
13	31-40	Women	X		
31	31-40	Women	X	X	
32	31-40	Women	X		
33	31-40	Women	X	X	
37	31-40	Women	X	X	X
2	41+	Men			X
16	41+	Men	X	X	X
26	41+	Men	X	X	
28	41+	Men	X		
29	41+	Men	X		X
35	41+	Men	X		
5	41+	Women	X		X
9	41+	Women	X		X
21	41+	Women			X
30	41+	Women	X		X
43	41+	Women	X		X
<b>Sum</b>			26	15	14

The respondents said their reasons for staying in Tubu are because they are born in Tubu and they have their families in Tubu. The most frequent answer to the question why the respondents stay in Tubu was that they were born there. All besides one respondent were born in Tubu. The respondent who was not born there moved to Tubu at the age of 10. Hence almost all respondents have lived in Tubu all their lives and therefore are used to the lifestyle in Tubu. Like a 56 year old man said (nr. 16):

*“I was born here and cannot think of any other place to live. I am so used to this lifestyle.”*

And a 23 year old man said (nr. 20):

*“I do not want to leave, I tried the life in Maun, but it got difficult so I came back. Here I am used to the life.”*

As said before another reason for staying was the family, see table 2. It was mainly the respondents around 18 years old that mentioned that the only reason for staying was that their families are in Tubu. Some respondents had already tried life somewhere else, and some wanted to leave to get an education or look for employment. One respondent returned to Tubu because she missed her parents and other respondents had tried a higher education but had either failed or did not have enough money to finish. Even though many respondents expressed a willingness to leave Tubu the respondents came back when they did not manage their living. It was more men than women that talked about the whole family as a reason for staying in Tubu. Women mentioned that their children go to school in Tubu, see category service, chapter 5.1.3. A 28 year old man said (nr. 34):

*“Because our four parents are living here, naturally we are bound to live here; we have a connection to Tubu.”*

And a 32 year old man said (nr. 40):

*“We are staying because our parents were born here, and our grandparents are buried here so we cannot go anywhere else”*

The respondents talked about advantages with having family and relatives in Tubu, for example that they can help each other. They mentioned they can borrow things from each other, like donkeys or equipment for harvesting, and also that their relatives can give them small jobs or land and help them when they are sick. The family members help each other with agriculture and rearing cattle, daily chores are done by all family members. Without the help from family members and relatives life would be more difficult for them. As a 31 year old man said (nr. 39):

*“...here in Tubu because we are related maybe your relatives can give you a small piece of land where you can grow crops. Because people are related it is easier to help each other.”*

And a 27 year old man (nr. 27):

*“I am collecting firewood for my mother; if I leave there is no one who can do it. We are sharing the life with our family, we must help each other.”*

### 5.1.3 Services

Table 3 shows two concepts that are included in the category services. School includes codes like *my children go to school in Tubu* and *the school is an advantage*. The concept clinic includes codes like *can go to the clinic* and *good with a clinic*. The category services also contains codes like *lack of facilities*, *no tar roads* and *no electricity*.

**Table 3. Main concepts in the category services.**

Nr.	Age	Sex	School	Clinic
34	18-30	Men		X
17	18-30	Women	X	
14	31-40	Men	X	
39	31-40	Men		X
41	31-40	Men	X	
42	31-40	Men	X	
3	31-40	Women	X	
10	31-40	Women	X	
13	31-40	Women	X	
31	31-40	Women		X
6	41+	Women	X	
9	41+	Women	X	
<b>Sum</b>			9	3

The primary school was the only reason the respondents mentioned explicitly as a reason for staying. The other services are something the respondents valued or wanted more of. Only three men are included in the concept school, see table 3. The women talked about that they cannot leave because the school is in Tubu which only one man talked about, instead the men valued that there is a school in Tubu. Like one 40 year old man said (nr. 6):

*“It is an advantage with the school here”*

And a 36 year old woman said (nr. 13):

*“My children go to school here. No one can take care of them if I leave”*

Since Tubu is undeveloped there are not many other services provided than school and clinic, many respondents complained that there are not enough services in Tubu. One respondent (nr. 34), blamed the bad roads between Tubu and Gumare for the slow development of Tubu. A couple of respondents talked about that they do not have any electricity and that they cannot watch sports on TV, and therefore not follow what is going on in the world. They would like a place for recreation and were they can watch TV. Another service valued by the respondents was the health clinic, but the respondents also talked about that they sometimes have to go to the hospital in Gumare when the nurse is not in Tubu and that they would want a hospital instead of only a clinic.

#### 5.1.4 Nowhere to go

The concept *nowhere to go* includes codes like *cannot think of another place*, *nowhere to go* and *no reason for staying* are creating the category nowhere to go. *No reason for staying* is included because respondents talked about it as if they do not know or have another place to go to.



**Table 4. Main concepts in the category nowhere to go.**

Nr.	Age	Sex	Nowhere to go
38	18-30	Men	X
22	18-30	Women	X
23	18-30	Women	X
1	31-40	Men	X
8	41+	Men	X
28	41+	Men	X
29	41+	Men	X
35	41+	Men	X
9	41+	Women	X
43	41+	Women	X
<b>Sum</b>			10

The respondents that talked about leaving were mostly in the age groups 18-30 and 31-40, they wanted leave Tubu to look for employment and get education. The older respondents expressed less willingness to leave Tubu and the respondents who wanted to leave generally said they have nowhere to go, see table 4.

It was more men than women that mentioned they do not have anywhere to go, most of them were over 41 years old see table 4, but also three respondents in the age group 18-30. Like a 47 year old man said (nr. 29):

*“We do not have the courage to go and look for employment in another place”*

And a 25 year old man said (nr.38):

*“...there is nowhere to go, but I will go and look for employment when life here gets difficult.”*

## 5.2 People’s risk perception

The most common hazards the respondents perceive in Tubu are *wildlife, floods, drought, animal diseases* and *health problems*. What people think of these hazards, what the consequences are and if they take any mitigating measures against the hazards are presented below. Hazards that were mentioned by only a few respondents are presented in chapter 5.2.6. In chapter 5.2.7 the result on the respondents’ ranking of the hazards is presented.

### 5.2.1 Wildlife

The risk/danger that most people in Tubu talked about when interviewed was the wildlife. A total of 25 people talked about the wildlife, 15 men and 10 women. Mainly the respondents mentioned that their fields get destroyed by elephants, which leads to hunger because they do not have any money to buy food for. But they also talked about their cattle getting killed by animals and that when moving in the bush there are a many wild animals they might encounter.

A major part of the respondents talked about the elephants destroying their fields, eating their crops and destroying the fences that prevent the wild animals from accessing their fields. The consequences of not getting any harvest is a diminished food supply, which according to the respondents makes life more difficult because of hunger and sometimes even starvation. Many talked about the lack of employment in Tubu which makes them more dependent on the

harvest, as almost all of the respondents do not have jobs, hence no money to buy food for. A 33 year old man (nr. 42), as many others have had problems with elephants for a long time.

*“The elephants have destroyed my father’s fields the last three years “*

And a 37 year old woman said (nr. 17):

*“The elephants destroy our fields, so we cannot harvest which leads to hunger and starvation”*

There is a general resignation when the people are talking about the problems with the elephants. The general perception is that the elephants are increasing in number and that there is nothing to do about them, they are too big and too many. The government provides pepper to plant in the fields which should chase away the elephants, but this does not work according to the respondents who have tried. A problem the respondents talked about is the compensation, mentioned in chapter 4.2.5, it is too little to live off, as a 53 year old woman said (nr. 6):

*“The compensation is only 300 pula even though the elephants destroyed the whole field”*

And 41 year old woman said (nr. 21):

*“When the elephants destroy our fields and fences the compensation is not good. Then I don’t know where to get money from.”*

The respondents also talked about how they are worried about encountering wild animals when moving around in the bush to collect firewood, water and food or when rearing cattle. The main problem are elephants and lions that might attack people, but when it is high water level some of the respondents also mentioned that hippos and crocodiles can come close to Tubu, which are dangerous especially for the children who sometimes are playing close to the river. Some of the respondents tell the children to go and play somewhere else if they see them close to the river. A majority of the respondents did not mention the risks regarding being close to the water, but they who did fishing talked about the danger of hippos and crocodiles. Several respondents had experience of encountering wild animals and most of them knew someone who had encountered wild animals. The main concern is that they might kill people or cattle. As a 25 year old man said (nr. 38):

*“A crocodile did hunt me once when I was fishing from land. There is nothing to do but report to the department of wildlife.”*

And a 32 year old man (nr. 40), mentioned he had been chased many times by elephants but there was nothing to do about them:

*“You just run for your life!”*

Only one person, a 28 year old man (nr. 34), did not have any problems with the elephants:

*“We don’t have much worries about the elephants now, it is like we are coping. We have been living with them for many years, so now we know how to chase them away. You just scream at them!”*

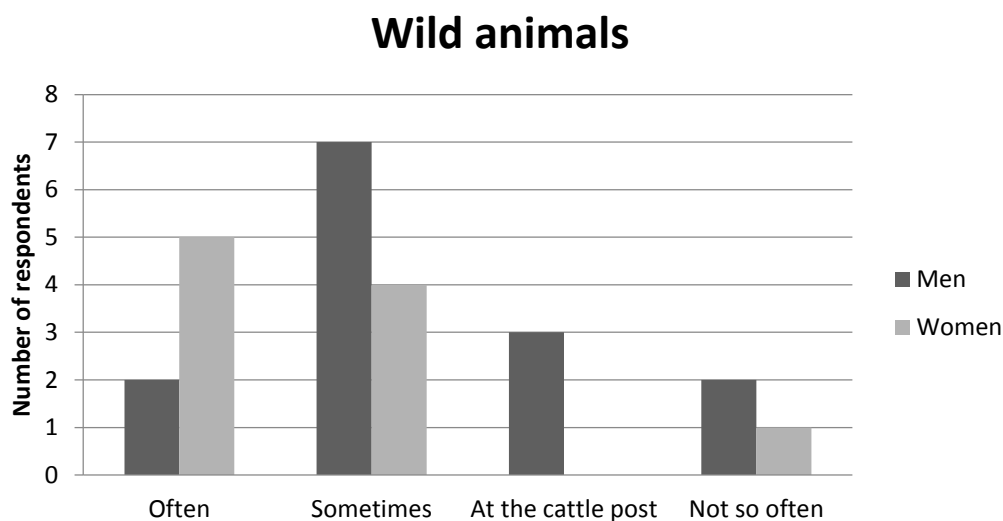
Even though one respondent (nr. 34) thought the people and elephants are coping, the majority of the respondents said the problem with wild animals is that there is nothing to do about them. They are too many and too dangerous; the only thing to do is to try to stay away from them. The respondents mentioned that if they see elephants close to their cattle, then they do not go there.

The respondents also talked about that they have problems with wild animals killing their livestock. Mainly lions, but also hyenas, crocodiles, baboons and jackals are a problem. Lions are the only one that kill their cattle the other kill their small livestock, like goats and chickens. When their cattle die the respondents mentioned that their lifestyle drops, more or less, depending on how many of their cattle that get killed. The reason is that their money is invested in the cattle and the compensation from the department of wildlife is not enough to cover for dead cattle. A 34 year old man (nr. 18) clarified it:

*“If you have five cows and the lions kill three, then you only have two left. That is a drawback!”*

And a 28 year old man said (nr. 34):

*“The compensation is not even enough to buy a new calf.”*



**Figure 4. Result on question "How often do you think of wild animals?"**

Figure 4 shows that women that talked about wild animals think about it on a more regular basis than the men. Men talked more about how their livestock was killed by wild animals and that the wild animals could kill them. Both men and women talked about how the elephants destroy their fields. The difference is that only men worry about wild animals when at the cattle post and they also talked more about encountering wild animals in the bush, while all women who talked about getting attacked by wild animals talked about consequences of wild animals coming to Tubu which men did not talk about at all. As 35 year old women said (nr. 33):

*“Sometimes the elephants come here during the night to eat from the palm trees. It happens that they break the palm tree which can fall on the house and crush it.”*

And a 67 year old woman said (nr. 43):

*“Last month the elephants passed through right outside of Tubu. I am afraid of them; they can kill you because there is nowhere we can go.”*

While a 47 year old man said (nr. 28):

*“I worry about the elephants when I am at the cattle post. I do not want to be there when the sun sets, when it is dark I want to stay here in Tubu because I am not worried they will come here.”*

### 5.2.2 Floods

Every year the Okavango Delta is flooded, the size and coverage of which depend on the rainfall in the catchment in Angola (Motsholapheko et al., 2012). This cause problem for the people living in the delta, the respondents talked mainly about two consequences; that it destroys their fields and that the movement becomes limited. Only a couple of houses in Tubu have been affected by previous floods, see Figure 5. According to Kghati et al. (2007) drought and floods are common shocks in the Okavango Delta and result in adverse impacts on rural livelihoods. There were 18 out of the 43 respondents, 10 men and 8 women that talked about floods when asked about what risks/dangers there are regarding living in Tubu.



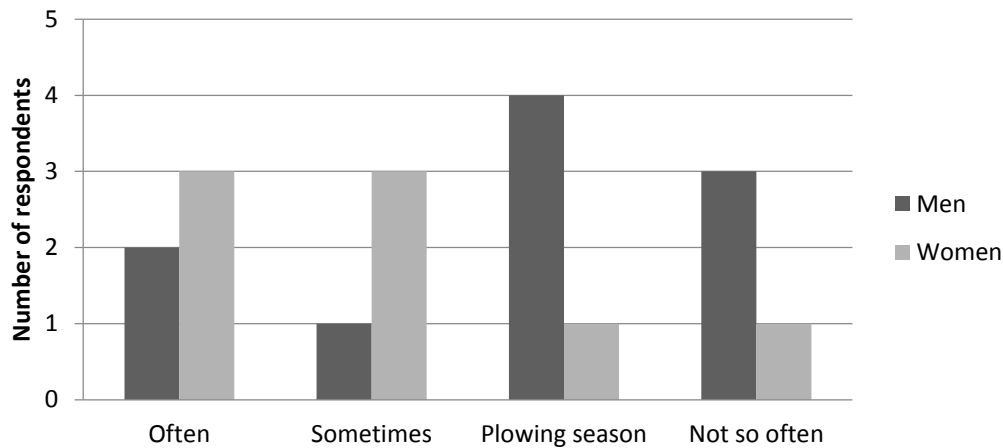
**Figure 5. Houses that were destroyed by the previous floods in Tubu.**

In 2010 the school and clinic were separated from the rest of the village because of flood. Therefore the government decided to build a bridge to make it safer to cross, and to make the school and clinic more accessible. Before the bridge was constructed the people had to swim or use canoes or boats to cross the river. The bridge helps people to access the school and clinic, but there are still problems as a 30 year old woman said (nr. 36):

*“Our movement gets very limited when it is flooded, because there are many rivers around Tubu. The floods blocked the road from Tubu to Gumare so I could not go and see the doctor in time.”*

When it is flooded people get surrounded by water at the cattle posts and it is difficult to access Gumare. Last time the road to Gumare was flooded the respondents said they had to use logs to cross the rivers, risking their lives in the strong streams. The government supplied a tractor to help people cross, and one man got help with an airboat to cross when he was sick. But going to Gumare for check-ups, to get medicine or grocery shopping was difficult at that time according to the respondents. See appendix C on how houses were destroyed by the flood and the logs that the people used to cross were the water level was as highest.

## Floods



**Figure 6. Result on question "How often do you think of floods?"**

Plowing season usually starts around October/November but depending on how dry the year has been the plowing season might start later. The respondents said that it is vital the rain starts before they begin growing crops. It is also important the plowing season ends before the water level raises otherwise their fields may get destroyed. As a 52 year old man said (nr. 35):

*“Sometimes when you are expecting a good harvest, the floods come and destroy it.”*

Figure 6 shows that women who talked about floods think about the consequences on a more regular basis compared to the men. The respondents talked about the harvest getting destroyed and the limited movement as the worst consequences of floods. Even if both men and women talked about the harvest getting destroyed they talked about it in different ways. The men talked about the floods destroying their fields and that the consequence is they will not get a good harvest. The women also talked about the destruction of fields when it is flooded but they talked about the consequences for the family, that they will not have food and which leads to starvation. The women think more about the household than the men do, like a 34 year old man said (nr. 14):

*“The floods destroy all fields and the grazing for the cattle. I worry about it under rain season and the consequence is that my life standard goes down.”*

And a 30 year old woman said (nr. 36):

*“...I worry about the floods many times and I worry about our house.”*

The people who were worried about the houses said they themselves had been exposed or their relatives. The majority did not worry about their houses because when a house gets destroyed it is easy to build a new because they are made out of mud and other materials from nature. The houses that have been destroyed by floods were located closer to the river; houses further away from the river have not yet been affected. Overall the respondents mentioned consequences of floods that they or their relatives had been exposed too previous years. Like a 52 year old man said (nr. 35):

*“...and it is hard to go to Gumare. Here we only have a clinic so it is difficult to see a doctor. Happened to me but I got help to get to Gumare with a boat...”*

The respondents expressed concern for future floods because they know how difficult it gets if their fields get flooded and how difficult it will get to go to Gumare, but the respondents said there is nothing to do to reduce the consequences of floods, the respondents just hoped that the rainfall will start early enough so they have time to harvest before the floods. One man mentioned it is possible to grow crops higher up on land so when it is flooded the water level does not reach the harvest.

5.2.3 Drought

A total of 12 people talked about drought, 6 men and 6 women. Almost all of the people depend on farming and plowing which makes the harvest vital to get food to eat. The main problem with drought people talked about is that it has a negative impact on the harvest, but the respondents also mentioned that drought affect the cattle. If there is not enough rainfall then the harvest will be no good, the consequences the respondents talked about are that they will suffer from hunger and in worse case starvation that year. A 41 year old woman said (nr. 21):

*“I worry for my family, because when there is drought we do not get good harvest, which means there will be nothing to eat. And here are no jobs were I can work to get money for food.”*

And a 27 year old man (nr. 27), talked about the problems for the cattle:

*“During drought there is no grass to eat for our cattle. When the rain starts it will be better for our cattle. There is a time when we move our cattle to different bushes to find something to eat.”*

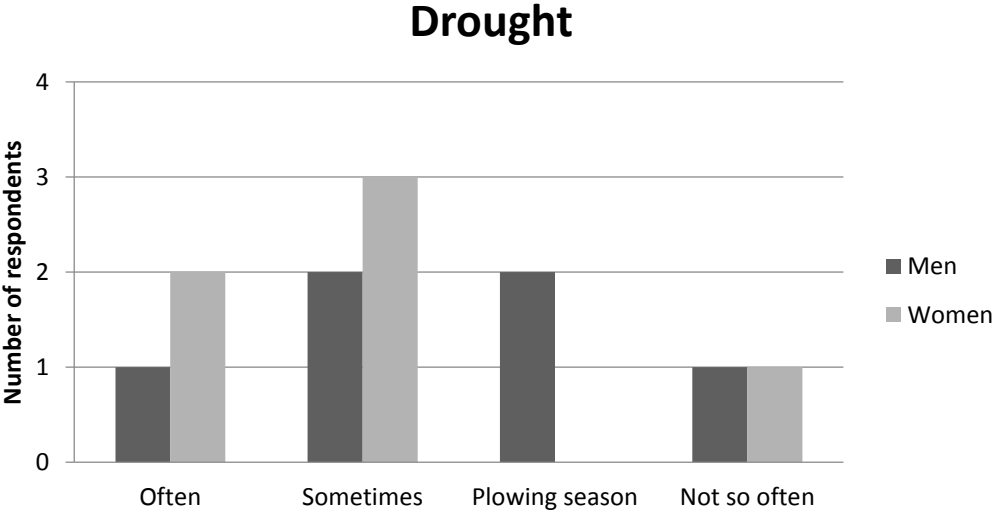


Figure 7. Result on question "How often do you think of drought?".

The respondents did not talk about any mitigating measures but said they become worried if October and November passes without rain and if there is no rain there will be hunger and maybe starvation. If they had a good harvest previous year they can use that to feed themselves, although most often there are no surpluses to live off. What they can do is to hope for employment at the drought relief program when food is scarce. Figure 7 shows that the women that talked about drought think more frequently than men about drought. Generally the women talked about how drought affected their harvest and that it will lead to hunger and starvation for family and relatives, especially for their kids. The male respondents also talked about that drought affect their harvest, but that it will lead to hunger for the whole family and

did not mention the children specifically. In addition the men talked about how drought affected their livestock, this concern did not the women share. The male respondents said there is nothing to do but move around the cattle to different bushes to find food for them to eat. In worse case the cattle might die due to lack of water and grass to eat, affecting the households' finances. There is a general perception that the dry period is worse now than it has been previous years. A 47 year old woman said (nr. 30):

*"When I grew up, there was water everywhere. We got to harvest every season, we could have planted everything in December and harvest it before the flooding occur."*

Another problem two respondents talked about is that since the water from Ikocha water reserve passes through Gumare before it reaches Tubu, sometimes during drought all water is consumed in Gumare. When this happens the people in Tubu have to dig boreholes for themselves or drink the water from the river. The water in the boreholes is not of good quality, the respondents mentioned they can become sick when drinking it. For example the respondents mentioned they might get diarrhea when drinking untreated water. As a 47 year old man said (nr. 29):

*"Sometimes we boil the water, but because we sometimes do not reach the boiling points it does not help."*

Most of the respondents said they cannot do anything to reduce the consequences of drought. The harvest they get is usually no more than to live off that year, hence most often there are no possibilities of selling any surpluses from the harvest. When it comes to the cattle it was nothing to do but move the cattle around to different bushes to find food for them to eat. In worse case the cattle might die which leads to economical consequences for the households. Many respondents talked about if there were jobs in Tubu, they would have money to buy food and other vital necessities, only a 27 year old man (nr. 27) talked about the possibilities of growing vegetables to reduce the consequences of drought:

*"We try to grow vegetables so that we have something to eat until the rain starts. Sometimes we can sell it and get some money to buy milk."*

#### 5.2.4 Animal diseases

There is mainly one animal disease that a total of 8 people, 7 men and 1 woman talked about and that is foot and mouth disease which affects their cattle.

According to the respondents with cattle, the foot and mouth disease has affected them the last five years. The problem the respondents talked about is that even though they take necessary precautions there might be an outbreak of foot and mouth 40 kilometers from Tubu which will affect their cattle in Tubu, and as a consequence they will not be able to sell their meat. Generally the respondents' did not understand why the foot and mouth disease is still a problem since they try to treat it. Like a 28 year old man said (nr. 34):

*"The veterinary officer said we have to treat our cattle, but we always do that. But time and again there is an outbreak of foot and mouth disease. We are always affected."*

And a 40 year old man (nr. 41) said:

*"I don't understand the consequences because every year we vaccinate but every year the foot and mouth disease is there."*

Because of the foot and mouth disease there is no market to sell the meat. Because they cannot sell, some of the respondents mentioned there is a problem with too many cows. Because they are too many sometimes there is not enough food for all of the cows, especially

during drought. According to the respondents the only way to reduce the number of cows is to kill them and eat the meat themselves otherwise some of the cows will most likely die.

Another consequence the respondents talked about of not being able to sell their meat is the lack of income. Since the cattle are the main source of income for most of families with cattle, their economy is affected by not being able to sell the meat. Many of the respondents that talked about the foot and mouth disease also talked about that they cannot support their family. As a 56 year old man said (nr. 16):

*“I do not have money to support my family. I want my children to go further in school, but I am afraid I cannot afford it.”*

And the 39 year old woman said (nr. 37):

*“The foot and mouth disease affects my life because my children go to school, but when I cannot sell my cattle there is no way I can support my children to go to school.”*

A possibility the respondents talked about is to move the cattle to the other side of the road where there is no foot and mouth, hence it is possible to sell the meat. The problem the respondents talked about is that it is expensive to have cattle there. Since it is not by the river they need to dig boreholes to get water, which the people cannot afford to do. Some of the respondents are planning to move their cattle when they can afford it.

### Animal diseases

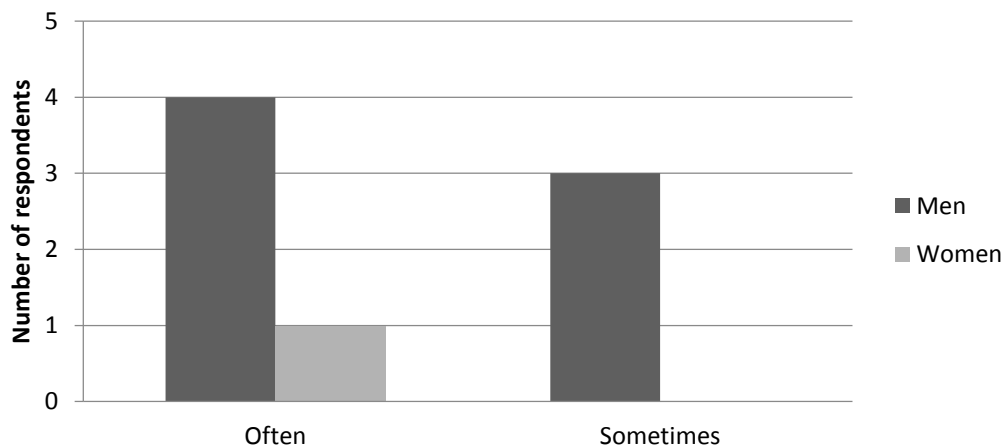


Figure 8. Result on question "How often do you think of animal diseases?".

As Figure 8 shows, men think about the foot and mouth disease a lot. The woman who talked about foot and mouth disease also thought about it a lot. The respondents mentioned that the only action they can do is to listen to the veterinary and vaccinate the cattle. But they said even if they do all that the foot and mouth still exists.

#### 5.2.5 Health problems

Of the interviewed 7 respondents talked about diseases, 6 men and 1 woman. They did not talk about a particular disease, in general a couple of diseases were mentioned which they had been exposed to or knew someone who had been exposed to. The diseases that the respondents talked about were among others malaria, HIV and Tuberculosis.

The government is trying to provide mosquito nets to people in Botswana living in the risk-zone for malaria. There are also posters on many places to inform about malaria and the



consequences. Most of the respondents that talked about malaria took actions to avoid getting it. Most of them mentioned the mosquito net, but they also mentioned mosquito repellent to put on the house and themselves to avoid being bit by the mosquitoes. As a 47 year old man said (nr. 29):

*“I was admitted to the hospital for three months. Because we are so close to the river I worry I will get it again, for that reason I sleep with the net when there are many mosquitoes in the house.”*

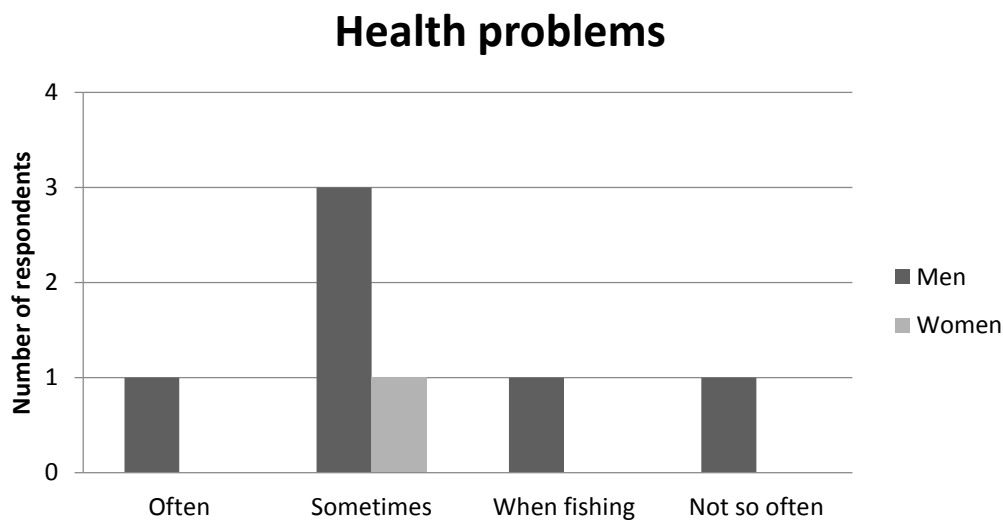
And a 44 year old man said (nr. 26):

*“When I go fishing I think of it and use mosquito repellent and when the mosquitoes are plenty I use the net.”*

Two people talked about HIV, both were men. One was a father who encouraged his children to go to the clinic for testing if they got HIV because it is a lifelong disease. The other man talked about reducing the number of partners and using condom to avoid getting HIV. He worried a lot about getting HIV because he knew people who had it.

Two respondents talked about tuberculosis, both of them knew someone who was affected. A 31 year old man said (nr. 39):

*“I think of tuberculosis many times because I am a smoker. When I share room with people who have tuberculosis I am worried I will get it from them.”*



**Figure 9.** Result on question "How often do you think of diseases?".

Figure 9 shows how often the respondents thought of the diseases they had mentioned. Depending on the possibility to protect themselves against the disease and the magnitude of the consequences the respondents thought about it more or less. The respondents that talked about malaria did not worry that much. The respondent, who only thought about malaria when fishing said there are more mosquitoes close to the river and more difficult to avoid them. The respondents that talked about HIV and tuberculosis were more worried. The woman that mentioned diseases talked about her high blood pressure which she have had for a long time. She did not treat it, when it got worse she just slept until she was better, she also mentioned that her health is in the hands of god.

### 5.2.6 Other risks

In addition to the risk already presented the respondents also talked about:

- Crime
- Car accident
- No electricity
- No employment
- Ambulance
- No higher education

Crime was mentioned by one man and two women. They talked about that people steal. The differences were that the man was worried for the older people and the women were worried for themselves. The man said (nr. 39):

*“Thieves go in at old people and steal....Yes I know someone that have been exposed”*

This shows that the man knew someone that had been exposed to the risk. The women had not been exposed but worried about it more often than the man.

Three respondents mentioned car accident as a risk, one man and two women. It was only one that had been exposed to car accident and it was a woman whose relatives died in a car accident. They were mainly worried about it when traveling. Two women talked about the lack of transport from Tubu to the hospital in Gumare. One woman had to deliver at home because the nurse was away and the ambulance did not arrive in time, and the other knew someone who died because the person in need did not get help in time. Many respondents mentioned lack of employment when talking about disadvantages, but only two respondents perceived it as a risk, one man and one woman. A man mentioned no higher education as a risk and two men mentioned no electricity. The respondents did in general not think of these as big risks, only one on women thought *no employment* was the greatest risk in Tubu. The consequences they mentioned because of lack of electricity was that they do not know what is going on in the world, but also that they could not follow sport on television.

There were five respondents who did not mention any risks/dangers. Four of them were women in age group 18-30 and then one woman in age group 41+.

### 5.2.7 Greatest dangers

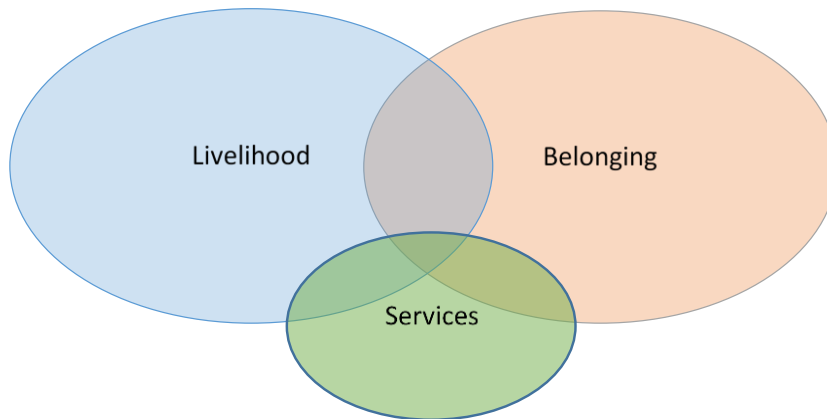
The authors asked the respondents to rank the risks they brought up. In this chapter the result from the ranking is presented, the five respondents who did not talk about any risk/dangers are not included. To get an indication in differences between risks with the same consequences the risks were grouped together. This means that risks as wildlife, flood, drought, no employment and animal diseases are one group in this chapter because the main consequence the respondents talked about was the negative effects on their fields and cattle. Hence they have a negative impact on their source of income. When the respondent talked about wildlife some respondents mentioned that people can be killed. But everybody talked about the direct consequence on their income and that is why wildlife is included in this group. The other group is risks like crime, car accident, diseases, and transport. These risks affect the people direct and not the source of income.

It was 20 men and 13 women that thought the greatest risk in Tubu were risks that affected their income. The men were more concerned about the cattle than the women, but the women thought more about the harvest. In the other group there were 1 man and 4 women.



## 6 Discussion

So why do men and women live in the high risk rural area of Tubu, Botswana? To answer the research question the authors analyzed the result presented in chapter five. The discussion in this chapter is divided in two parts, first the discussion why people stay in Tubu and then the discussion on people's risk perception. A discussion on differences between men and women is done throughout the chapter.



**Figure 10. Illustration of the three categories important to why people live in high-risk area.**

The respondents' answers are categorized into four categories to answer the research question. Figure 10 shows the three categories respondents in this study value with living in Tubu. The fourth category is *nowhere to go* and that is respondents who think the three categories in figure 10 are not fulfilled in Tubu and therefore want to leave. These respondents only stay in Tubu because they have not found another place to go or they do not have the money to move. In this research the respondents' value for *services* provided in Tubu has been proven not to be as important as livelihood and belonging, hence a smaller circle in the figure.

When the lines of three categories are crossed, it is shown that the advantages with living in Tubu outweigh the disadvantages and some risks are neglected. This might be applied to villages in a similar situation, which means that all three categories must be fulfilled for people to consider relocating from high-risk areas. A study done in India discusses the problems that occurred when people in a fishing community were relocated further away from the sea because of the likelihood of a tsunami. The study showed that people moved back because they felt a belonging to the sea and because fishing, their livelihood, was vital to them (Raju, 2013). This is consistent with the results from this study since these categories are major factors why people want to continue living in Tubu. Problems when relocating people have also occurred in Southern Africa. The people wanted to move back and not live in the areas where they had been relocated. In Mozambique, the problem was solved by relocating people during the flood season and then allowing them to move back to village after the flood season (IRIN, 2009).

### 6.1 Livelihood

Under the category livelihood the concept and codes regarding what people live on are included, see chapter 5. The main livelihood in Tubu as mentioned earlier is agriculture. They appreciate the closeness to their cattle and also the possibility to collect food from the bush. And as seen from the result in chapter 5 many respondents appreciate the inexpensive lifestyle in Tubu. The link between poverty and vulnerability is strong; many low-income groups live in high-risk areas (IFRC, 2010). When walking through Tubu you notice how poor people are

on their clothing and the houses they live in. Because of the poverty in Tubu the authors believe that a major reason for staying is the cheap lifestyle.

Even though many respondents' do agriculture and Tubu is good for that purpose the result in chapter 5 points out that lack of employment in Tubu is a problem. Since the respondents talked about the difficulties in finding jobs, the authors believe the drought relief program offered in Tubu is important for many of the people to get some income to be able to buy food when necessary. The value of sustainable livelihood for a population's willingness to stay in a community is also confirmed in a research by Raju (2013). This is also a reason why agriculture is so big in Tubu, there is no other livelihood. If they want another lifestyle they have to move to town and start a life there. The younger people have a greater willingness to leave Tubu to start a new life in town than the older people. A research done in villages around Okavango Delta revealed the same thing; it is mostly the younger people that want to stop with agriculture (Mbaiwaa & Stronzab, 2010).

The respondents that talked about lack of employment also talked about the desire to have more tourism in Tubu or other cash based income. At the same time, as already mentioned, they appreciate the cheap and traditional lifestyle. The authors feel that there is a contradiction here; if Tubu gets more developed it is most likely the lifestyle where they live on what nature brings will disappear. It might be difficult if not impossible to have both. A case study of the Okavango Delta brings up the difficulties to succeed with growing tourism without compromising the traditional lifestyle in rural villages. But the report also implies the potential of a developed village without compromising (Harrison & Maharaj, 2013). A different report noted a shift from traditional livelihood activities like gathering, livestock and crop farming to cash based income. Many people that were interviewed in the report abandoned crop farming because of damages by wildlife or lack of interest for farming (Mbaiwaa & Stronzab, 2010). The authors mean that if the people in Tubu want to create a more developed town at the same time as some want to have the traditional lifestyle there might be a friction. As mentioned before in a more developed community economic attachment is more important than attachment to land, will both attachments be fulfilled or will there be a transition to economic attachment in Tubu in the future. If the economic attachment will become stronger and the traditional lifestyle is abandoned people in Tubu may not be as vulnerable to risks as they are today. For the people who do not live in villages a modern lifestyle is preferable, this lifestyle can be difficult to maintain for people who live in villages. The people are used to the traditional lifestyle because they have always lived like that, which creates a feeling of safety.

People in Tubu are depending on their livelihood which is tied to Tubu and not mobile. For people in countries where the livelihood is more mobile people are probably moving around more. Therefore people in Tubu do not have the same opportunities to leave. If they leave they may have to completely change their lifestyle and that is a bigger step than just move and continue with the same lifestyle you are used to. The authors believe this is a reason for why people choose to stay in Tubu despite the difficulties. The difficulties in finding jobs in other places in combination with the drought relief program offered in Tubu and good possibilities for agriculture makes people stay. The drought relief program is the third most important livelihood activity in Ngamiland in Botswana where Tubu is located (Kgathi et al., 2007). The importance of livelihood for people to want to stay in a high risk area was also confirmed by Raju (2013).

#### 6.1.1 Income

Because of the foot and mouth disease many of the respondents do not have a stable income which contributes to that people suffer. It also contributes to difficulties leaving Tubu because

to start a life in town money is necessary, hence they are suffering in Tubu but do not have the possibility to leave. People want to leave Tubu to create a stable income but many respondents do not have the capacity to do it. The authors believe there is a feeling of helplessness and that the respondents do not have the creativity to try things that can create an income. According to Raditloaneng (2009) the poorest people sometimes give up and do not have a chance to change their situation. It is often people without cattle or plowing land. This can be applied on Tubu because the situation with foot and mouth means that even if you have cattle you do not have money. Raditloaneng (2009) also discuss that people sometimes lack motivation to work and are over-dependent on welfare handouts from the government and handouts from other extended family members. According to the authors this could also be applied to some of the respondents in Tubu who only depended on the drought relief program and jobs offered by extended family members. The security that comes with this is an important reason for staying according to the authors. This can also be seen when only one respondent talked about creating jobs by developing his agriculture in Tubu. It was mostly men that talked about the foot and mouth and possibility to move the cattle so they can sell the meat. This is probably because of that men are responsible for the cattle. The feeling of helplessness among the respondents is strong according to the authors. The authors believe that a possible approach to help the people would be to educate them about sustainable agriculture and how they can reduce the consequences of the hazards.

#### 6.1.2 Differences between men and women

There were clear differences between men and women when they talked about livelihood. Both men and women talked about agriculture as a reason for staying, but the majority of the respondents that talked about rearing cattle were men. The women instead talked about the fields and harvest. This may be because the women are responsible for the field and the men for the cattle. Traditionally in Botswana it is the sons that become heir to their father's cattle, the women tend to own small stock, such as goats. Given that their family is in Tubu, many of the respondents inherit the livestock from their parents wherefore it also could be a reason for staying. According to Mogotsi (2012), the bulk of wealth in Botswana is often in the form of livestock especially cattle, but also goats and sheep; hence there is no money to inherit which could be of help to start a life somewhere else. They have their parents in Tubu but also their parents' cattle and fields which because of the difficulties finding employment are important livelihoods to them. There are similarities between men and women, both appreciate the cheap lifestyle in Tubu. Even though economical responsibility most often is the men's, the consequences of being poor affect both women and men and this might be the reason for why both men and women talked about the economic advantages with living in Tubu.

#### 6.2 Belonging

Codes and concepts like *born in Tubu* and *family* creates the category belonging, see 5.1.2. According to Salmon & Shackelford (2007) family relationships are important to our social success and emotional health. The authors believe that belonging is important to people. People are social individuals and want to feel at home. In Tubu the land attachment is important and they talk about Tubu with pride. Family attachment is a big part of the respondents' feeling of belonging to Tubu and it is common to live near the parents the whole life. In countries where the extended family structure does not exist, for example where the children move away from their parents at a young age, the feeling of belonging may be different and they might value other things than the people in Tubu. The importance of land attachment should be compared to places where families have lived for generations and land is something people inherit from their parents. Without belonging people may feel rootless and not at peace.

### 6.2.1 Family structure

Like presented in chapter 5 the respondents talked about how important it is to help each other in the daily work, especially the men talked about the importance of helping their parents. This extended family structure has been the basis for social security for generations during times of need and crisis, and is comprised of generations of close relatives (Mokomane, 2013). It is clear that the respondents value the benefits of living close to family and relatives. The community attachment in form of bonds to other individuals is an important factor for why people want to stay in a community (Speare, 1974). Like presented in chapter 5 the respondents talked about that the family and also that relatives can help each other, for example by giving a piece of land. To own land is very important in Botswana and the culture and land attachment is creating a feeling of belonging. This means according to the authors a feeling of security. That people stay in the village they are born in is not unique for Tubu in Botswana. It is only in the recent years there has been some change to these family structures due to demographic and socio-economic transformations (Mokomane, 2013). According to the authors this extended family structure is still of importance in Tubu. But because the authors only interviewed people living in Tubu and not people who have left Tubu there is be a possibility that some people have succeeded in finding work in town and stayed there.

The respondents talked about a connection to Tubu because they are born there, that they are bound to live there. According to Gwebu (2012) Botswana as late as 1970s was a rural country with no people living in towns. And possibly because of this, people still live according to old traditions and stay with their family in the village where they were born. The family as a reason for living in informal settlements is also mentioned by Axelsson & Linge (2012). Belonging and connection to family is very important to older people in Tubu and that is noted when respondents' over 41 talked about only leaving Tubu for a short period of time, see chapter 5. It is understandable that the respondents do not want to leave their families entirely.

From the result in chapter 5 the authors believe that it is mostly younger people that leave to get an education or a job. This is consistent to other researches done were it is showed that the rural-urban migration is especially something the young people do (Min-Harris, 2010; Akinboade & Lekwape, 1997). The younger people can have easier to leave because they have more courage and are not as used to the traditional lifestyle. They have grown up with television and cellphones and that means they know more about other lifestyles than their parents did in the same age. This can create a willingness to leave and it is a security to know what lifestyle they leave for. The people that leave Tubu to get an education are likely to not return because there is no employment in Tubu where they can use their education. According to Imogen Mogotsi (2012) education does not make much difference in rural areas in Botswana as to whether people will get a good job or not. The authors think that even if the family and the feeling of belonging to a place are still important in Botswana it may change. More people may leave and get education and jobs in other places and the land attachment may be replaced with economic attachment.

### 6.2.2 Differences between men and women

Both men and women expressed the importance of belonging but the result shows that the women think more of their children. The men had instead the whole family in mind when talking about Tubu. According to Ntozi & Zirimenya (1999) the women are the ones taking care of the household and the children while the men usually are responsible for the socio-cultural and economic situation, which is consistent to this study. A reason can also be that the men have the responsibility to take care of their parents when they grow old. In Botswana, women move to their husband's home when they get married. The respondents most often had

a husband or wife who also was born in Tubu so this may be one of the reasons why women stay in Tubu. This means that the women may have fewer opportunities to leave Tubu than men do. Since the men want to stay in Tubu to take care of their family the women are bound to do so as well. Also Axelsson & Linge (2012) noted in their study that women often follow the men to Guinaw Rails South and sometimes probably without knowing much about the place.

### 6.3 Services

This category was not as important as belonging and livelihood, because the respondents talked less about these matters, see chapter 5. As seen in the result mainly women talked about the school as a reason for staying in Tubu, the possibility for the children to go to school to get education is important to them. It has been seen in a study done in USA, that the availability of education decreases the inhabitants' plans to move in combination with the satisfaction the inhabitants feel about the community and their attachment to the community (Long et al., 2012). The authors believe that more people would leave Tubu if there would be no school.

According to Allen et al. (1991), services like hospital, schools and recreational facilities play an important role for people's community satisfaction. This can be seen in the result where many respondents want more facilities in Tubu. The clinic is also valued by the respondents, see chapter 5. To create a feeling of security, facilities like hospital and police station is of great importance according to the authors. Services are connected to how developed a community is which means that more livelihood in form of businesses and cash-based income lead to more facilities. But also here the authors feel a contradiction. If services will be provided in Tubu the people have to use them and if they are going to use them they may not be able to only live off what nature brings. There cannot be shops where no one is purchasing. The authors feel that if there is a basic range of services, for example school and clinic, other facilities will be developed first after the lifestyle is developed to a more modern lifestyle. It is probably not the only reason for moving but without the school and clinic it might be that people would leave to a greater extent. The people understand that education is important and therefore the school is vital to them. Offered services in Tubu are not much, but still important.

### 6.4 Nowhere to go

It is the young people with relatively good education that migrate (Akinboade & Lekwape, 1997). Together with the result in chapter 5 the authors believe, as said before, it is the young people that try to leave Tubu, the older people are used to the traditional life with agriculture based on non-cash based income and do not have the ability to adapt to another lifestyle. There is no other place to go because they do not know how to live the life somewhere else. As mentioned in the results the older people expressed that they are afraid of leaving Tubu to look for employment, it is mainly the younger people that have the courage to go look for employment. It may be that the older people think the life somewhere else will be harder and basic needs might be more difficult to maintain. Rural youth often have innovation and entrepreneurship that older people lack, which may make them more suitable for a life not based on agriculture (IFAD, 2011). Why older women did not talk about that there is nowhere to go might be because they accept that the men decide if the family should move or not.

A major reason for not being able to go anywhere else, even though some respondents said there were no reasons for staying as mentioned in the results, is because they cannot afford it. As said in the result some respondents had tried to leave but had been forced to go back because lack of money. Studies have shown that many people move because they want a



different lifestyle seeking for better economic opportunities, but also that it is not the people from the poorest households that migrate but people from the poorest areas (IFRC, 2012; IFAD, 2011). Since the economic situation for the respondents are strained due to foot and mouth disease, and more, the respondents that talked about that they have no reasons for staying probably do not have any possibilities to leave because of their economic situation.

## 6.5 Risk perception

It is important to understand people's risk perceptions and how they think about risk to create a theory on why people live in high risk areas. How a person perceives risk rather than the risk itself defines the person's behavior against the risk source. Because of this, theory about risk must be based on how people perceive risk and the factors that affects the risk experience (Riskkollegiet, 1993). Sjöberg (2000) means that risk target is a very important factor when discussing risk perception. People estimate risk differently depending on if they themselves are exposed to the risk or their family or people in general. This is consistent to this study where people mentioned risks they have been exposed to first. And after that they talked about risks their family and relatives have been exposed to.

The study did not show big differences in which hazards men and women talked about, instead it differed how they talked about the hazards and the consequences. Gustafson (1998) writes that it is better to explain differences in risk perception from a situational context rather than gender context. This can be consistent to this study where the respondents perceive different risks depending on their daily situation and what they have been exposed to rather than if they are a man or a woman. The daily situation in Tubu is different depending on if you are a man or a woman. In Tubu the women are more with their children at home and the men are more at the cattle post. There are mainly five risks that the respondents talked about that affected their lives in Tubu *wildlife, floods, drought, animal diseases and health problems*.

### 6.5.1 Wildlife

The conflict between human and wildlife has always existed. Growing wildlife population as a result of conservation efforts can create friction with humans (Lamarque et al., 2009). On a local level the wildlife is devastating and creates suffering among people in the small villages. But on a higher level, both for Botswana and for the world, the wildlife is an asset. For Botswana it is beneficial because of tourism and for the world the animals are important to have for the balance of the ecosystem (Sifuna, 2010). The result presented in chapter 5 shows that the respondents' are well aware of the wildlife and the danger of encountering wild animals, which is why many do take mitigating measures to minimize that risk. But when it comes to prevent the elephants from destroying their fields the majority of the respondents said there is nothing to do, as mentioned in the results some respondents had tried the pepper but that did not work. According to Sifuna (2010) damages by wildlife is high in rural areas because of poverty, illiteracy, lack of capacity in terms of financial resources and technical know-how, which probably is a reason why the respondents say there is nothing to do and cannot adopt modern wildlife damage control methods such as electric fencing, use of fire crackers, chili ropes and chemical repellents.

In a study done by Gore & Kahler (2012) the conclusion was that men and women have very similar conceptions of the risks regarding wildlife. This is in line with this research because both men and women talked about wildlife destroying fields and killing/injuring cattle and people. According to Gustafson (1998) women mainly perceive risks that are threats to their home and family, which accords with the results from this research. Only female respondents expressed concern about wild animals destroying their homes and attacking people in Tubu

while male respondents felt safe in Tubu but were worried when moving in the bush or at the cattle post. This can be explained with that men move around in the bush more than women do, the respondents perceive the risks they are exposed to. As described in chapter 3 risk and vulnerability is linked together. The men and women in this research are vulnerable to wildlife in different situations, they do different things in everyday life, which may be the reason for the differences in the result. A study done in India by Ogra (2008) showed that women are more vulnerable to wildlife than men, because women in that place moved around more in the forest than men. This implies that it is important to see the situation and not only the gender when discussing risk perception. Gustafsson (1998) also talk about that it is important to look on the situation and not only the gender when discussing risk perception.

#### 6.5.2 Floods

Tubu is located close to the delta because it has advantages. The opportunities of collecting food and water from the delta and the fertile soil are according to the authors' important reasons why respondents' overlook the risks with the floods. According to Wachinger et al. (2013) people who live close to a river might understand the risk, but are willing to accept it because of the benefits with living close to the river; the advantages outweigh the negative impacts. Even though the people have experienced floods, the consequences have not affected their houses to such a great extent, the consequences mainly affect their source of income food security, which can lead to hunger and sometimes starvation. But there is a security net of drought relief program and help from other family members that will make sure people will get food. This should contribute to that the negative impacts from the risks will probably not push people to not having food at all. This security might make people somewhat indifferent or lazy in taking own actions to reduce the consequences of the floods.

As seen in the result floods make it difficult to move around for the respondents, making it difficult to go to Gumare for groceries, and difficult if they are sick and may have to go to the hospital in Gumare. This may create a feeling of insecurity and helplessness, because the floods are out of their control and they have difficulties leaving Tubu when it is flooded. The cattle is important, as said before, and this is showed when the respondents do not talk about staying in Tubu during flood season, instead they are as usual at the cattle post and risk to be isolated by water. The bridge seems to have made the respondents less worried, now they feel their children can go to school safely and they can also access the clinic. The authors believe that as long as the bridge cope with the floods making sure it is possible to cross the river to access the school and health clinic, the respondents will feel safer and worry less for the floods. The next step according to the authors is to ensure a safe connection between Tubu and Gumare. The authors believe that it would help the respondents feel safer regarding the floods.

As mentioned in the results women talked more about consequences for their household than men did. The male respondents only talked about their harvest and fields getting destroyed and some male respondents, especially they who did fishing, even talked about the benefits of floods. This implies that the male respondents had a more economic view on the consequences of floods than women. These findings are consistent with Gustafson (1998) who talks about that men are more concerned about their working life and economic situation while women worry for their household. Generally the consequences that were mentioned had been experienced or the respondents knew someone who had been exposed. As said before these results imply that when discussing risk perception it is important to put it in a situational context and not only in a gender context. What could be noted is that the female respondents tend to worry more, see chapter 5.2.2, about floods than the male respondents, which is consistent with Gustafson (1998). He talks about that men and women worry about the same

risks, but women tend to worry more. A study on floods in Taiwan also shows that men were less worried for the floods than women (Ho et al., 2008). In most cases a direct experience of a natural hazard leads to higher risk perception, but they who did not experience any personal damages are more likely to believe that a future event will unlikely affect them and their risk perception decreases (Wachinger et al., 2013). Most of the respondents have a direct experience of the floods and therefore understand the consequences of floods, but they accept the risk since they do not do anything about the floods. The reason why they accept it might be that they have little resources to affect the situation, which is something Wachinger et al. (2013) talk about; that people might understand the risk but if they have little resources to affect the situation they accept it.

### 6.5.3 Drought

Drought mainly affects dry land farming, which is dependent on rainfall, but do not have as big impact on flood recession farming which is dependent on the Okavango river floods (Kgathi et al., 2007). In Tubu people mainly do flood recession farming but drought still affect the respondents, see chapter 5. Flood recession farming is better when there is little rainfall because the yields are bigger than with dry land farming (Motsumi et al., 2012). Since almost all respondents said they depend on natural resource based activities they are vulnerable to drought. Drought is one of the most frequent climate-related disasters in Africa with devastating consequences for the food security of agricultural households (Rojas et al., 2011). The drought has a big impact on the maize yield which is one of the crops the people harvest. The people are continuing doing the same type of farming even though floods have destroyed their fields before because of late rainfall, the respondents said there is nothing to do, just hope for the best, even though many countries according IFRC (2012) seem to experience more extreme weather in form of drought and flood.

The authors feel that the respondents can do more to reduce the consequences of drought. For example the respondent who talked about growing vegetables, see chapter 5. The respondents can irrigate the vegetables if the rain is late. There are more difficulties providing the cattle with enough food, especially now when they cannot sell the meat and there are a lot of cattle. It feels like the respondents accept the drought more than the floods since the respondents talked more about the floods and the consequences of floods. The reason might be that the respondents feel there is more to do reduce the consequences of drought even if they say there is not. Although it is important to take in mind if the drinking water from Ikocha water reserve is finished; there is nothing the people can do. When they have to drink untreated water from the river or boreholes it might affect their health, even though they try to boil the water.

### 6.5.4 Animal diseases

As said before the bulk of wealth in Botswana often is in the form of livestock, especially cattle (Mogotsi, 2012). This asset accumulation is livestock, which usually is relatively easy to sell in order to serve as a buffer against shocks and unforeseen expenses. Even relatively small shocks can push people who live just above the poverty line into poverty. Asset accumulation is an important part of a households chance to reduce the consequences of shocks (IFAD, 2011). Foot and mouth disease is relevant today because it restricts the people in Tubu from selling their cattle and not only is the largest source of income gone, but the possibility to have a buffer for unforeseen expenses are also gone. According to Antwi et al. (2013) families tend to show much commitment and concern to the wellbeing of their animals because animal diseases affect their income directly. The foot and mouth creates a difficult situation in Tubu, because except vaccinating the animals, which the respondents already do, there is not much to do according to the authors. To move their cattle to a place where they

are allowed to sell their cattle is more complicated than it seem. Without money they cannot move their cattle and with the situation with foot and mouth the respondents do not have money. When the restriction of selling cattle is revoked in Tubu, the problem is solved and they do not have to look for places to relocate their cattle. The authors believe the respondents with cattle are waiting for the possibility to sell their cattle, and then the life would be better because it creates a stable source of income. Since the life in Tubu is mainly non-cash based their cattle is a vital asset and therefore they treat it well.

It is clear that the men worry more about the foot and mouth disease than women since they are the ones taking care of the cattle. Gustafson (1998), talk about that men's concern are often related to economic problems in this case not being able to sell the cattle and the consequences of that.

#### 6.5.5 Health problems

There are relatively few people talking about problems connected to health. The people that talked about health problems understood the consequences and therefore took necessary precautions, like sleeping with a mosquito net or use insect repellent to prevent malaria. It was clear that they worried less if they could take mitigating measures to avoid the disease. The ability to master the consequences affects the risk perception (Riskkollegiet, 1993). HIV prevalence in Ngamiland where Tubu is located is one of the highest in Botswana (National AIDS Coordinating Agency, 2012). Even though Tubu should have a high prevalence of HIV only two respondents talked about it, see chapter 5. The reasons might be that they were embarrassed or afraid of talking about it or they might not see it as a risk. Because the prevalence rate is rising in Botswana even though the government provides free treatment it seems like the people do not take any mitigating measures against HIV.

A problem that is connected to the health is the time for an ambulance to arrive, see chapter 5. Because of the bad conditions of the road the ambulance have problem to access Tubu from Gumare, like all other cars. There are challenges in accessing high-tier health services in the rural areas, especially in Ngamiland where Tubu is. This is especially a problem for women who cannot access clinics and health facilities, because their lives are at risk when delivering at home (Ngwenya & Nnyepi, 2011). One respondent had experience of delivering at home because the ambulance was too late. The authors feel this problem cannot be solved without an upgrade of the road. The road is also a problem when it is flooded, see chapter 6.5.2.

According to Gustafson (1998) women tend to think more about accidents and health risks than men. This could not be seen in the result in this research. Instead it was the male respondents that talked about health problems, see chapter 5. It might be because the men felt safer during the interviews and opened up more than the female respondents. Health problems are likely to be more sensitive matters than other risks. The women that talked about health issues knew someone or had themselves experienced the problems they talked about. The same goes for the male respondents. Direct experience has according to Wachinger et al. (2013) a big influence on risk perception.

According to the authors health problem should be of greater concern, especially HIV. HIV which is a major problem, at least for Botswana as a country, affects many people. It might be that the respondents do not see it as a problem because of the antiretroviral drugs they get from the government. The authors think it is still taboo to talk about HIV in Tubu, hence the low number of respondents talking about it. The authors observed from staying in Botswana, that parents do not talk about sex with their children and neither does the school. If they do not talk about it with someone there is a small possibility they are willing to talk about it under the interviews. This may be a source of error in the report. The respondents are

uncertain if the women did not want to talk about diseases because they do not have the courage or if they just do not see it as a risk.

#### 6.5.6 Summary

Livelihood together with a feeling of belonging and some services leads to that people in Tubu overlooks the risks regarding living in Tubu and therefore stay. The people have bonds to Tubu, generations of relatives have lived there and they have their living relatives and families there. This extended family structure is an important reason for staying and a security in times of need and crisis. To leave Tubu is therefore a major step and something many cannot do. Some people, mainly men, leave for shorter periods of time but come back to their families when work is finished. To move the whole family is very difficult when they do not have money and the older people do not want to move, because they have a bond to Tubu and are used to the lifestyle. Usually it is the men's decision if the family should move and the women will follow, therefore women have fewer opportunities to leave than men. The male respondents expressed that they want to stay to take care of their parents and family. Family as a reason for living in high risk areas was also confirmed by Axelsson and Linge (2013).

Similarities with a report from Axelsson and Linge (2013) exist, but there are also differences. Family and education are shown to be reasons for people to stay in Guinaw Rails South in Senegal as well as they are important reasons for people to stay in Tubu. But to own a house is not of importance in Tubu as it is in Guinaw Rails South. The situation in Guinaw Rails South is different from Tubu since it is an urban community and Tubu is in a rural area, therefore it is natural that people value different things with the community. In an urban area people have probably not been residents for a long time and therefore the land attachment is not as important as for the respondents in Tubu. If generations have lived in a place, like the situation in Tubu, the culture and land attachment are of more importance than the economic attachment, for example own house. The authors think that it is important for the people in Tubu to own land and to have good grazing land. The attachment whether it is land, culture or economic creates a feeling of belonging.

Women tend to worry more about the same risks as men, but did not do more than men to prevent the risks or reduce the consequences of them. In summary the people understand the risks and the consequences of them, but most often they do not do anything to reduce the consequences. Maybe they lack the knowledge of appropriate mitigating measures or it might be that their situation is so difficult that there actually is nothing to do. The authors believe that there are mitigating measures to take to reduce the consequences, like starting business or other projects on the side of farming. Or try to grow vegetables like one respondent already did. They get free seeds to plant from the government which means there is only time to lose in trying. Wachinger et al. (2013) talk about that a reason why people do not take any actions even though they are aware of a problem is that the responsibility for action is transferred to someone else. According to the authors this can be consistent to this study because many of the respondents are waiting on a salvation created by the government or someone else. This helplessness can be due to the difficult situation in Tubu and that the respondents just give up and have little resources to affect their situation. There are many different risks in Tubu that affect the people in a similar way, which might do that the respondents feel like there is no point in trying to reduce one risk when they know there are other risks that also will affect them.

There are many advantages with living in Tubu regarding the life the people are used to live. They have their land and cattle in Tubu which are important livelihoods to them. Many have no education and therefore only know how to do agriculture, something they have done for generations. Hence they have no other knowledge and have therefore no other place to go. To

live on what nature brings is something they have done for generations and it minimizes the expenditure. Like the situation is now many respondent want a better life and talked about leaving but the consequences of the risks are not so severe that the respondents have to leave right now. The authors feel if the consequences of the risks get worse for example more wild animals, severe drought or floods the respondents are going to leave Tubu to a greater extent. But if they risks get worse and the people in Tubu are forced to leave, the people have to start a life somewhere else without money and that can be very difficult. If the consequences of the risks do not become worse the authors believe that many will move anyway, mostly young people, or if they do not leave at least change from traditional lifestyle to a cash-based income.



## 7 Conclusion

Why men and women live in high risk areas is a very complex question. From this research four major reasons were found for why women and men stay in Tubu. Under these categories there are different codes and concepts. The connection between the categories is probably complex for example the reasons for staying vary from person to person. The results from this study were four categories which are:

- *Livelihood*. People need something to live off and this is an important reason for staying in Tubu or when choosing a place to settle in. It can be that person own land where they can grow crops or that the area is good for rearing cattle. It can also be cash-based employment, in Tubu many respondents expressed the desire for more employment.
- *Belonging*. For the respondents in Tubu it was very important with a feeling of belonging. It can be that the respondent's family live in Tubu or that their wife/husband is from Tubu. Family is a big part of the respondent's life and it is often a reason for staying in Tubu, the bonds they have with their families do that they want to help each other.
- *Services*. Some respondents expressed that the school was a reason for staying in Tubu where their children can get education, and many expressed the school and clinic as advantages hence something they value. On the other hand they talked about that the facilities in Tubu are too few and that they often have to go to Gumare for various causes because the services provided in Tubu were not enough.
- *Nowhere to go*. Some respondents who did not have any reasons for staying in Tubu or wanted to leave to start a life in a different place, had the opinion that there is nowhere for them to go. The life somewhere else would probably be more difficult than in Tubu.

These factors all contributes to the people's willingness to stay in Tubu in combination with their risk perception. Livelihood is vital and since people have been doing agriculture for generations it is understandable that they want to keep doing it. Men did think more about the cattle and the women more about the fields. The reason is because the men are the ones taking care of the cattle. Many respondents wanted more jobs and businesses in Tubu and said that if there were more jobs life would be better. This implies that the people like living in Tubu and want to stay if there were more employment. If Tubu gets more developed they might have to abandon the traditional lifestyle and the income would become cash-based. This might be something some people want but other want to continue with the traditional lifestyle, especially older people.

Belonging is a combination of being born in Tubu and that the family is located in Tubu. Men stay with their parents because they have the responsibility of taking care of the family when they grow old. The women often follow the man to the man's family and live there, this means that the women do not have the same opportunities to leave Tubu as men. Women live there because their men do and men live there because their families do. The family bonds make people stay in Tubu and the family is important to respondent's life. The respondents have a land attachment that creates a feeling of belonging and also a feeling of security.

The services provided in Tubu were not enough, but the school was vital, especially for women, because they wanted their children to go to school. The clinic was also vital but the



respondents expressed a desire to have the hospital closer to them. Likely more facilities will be provided if Tubu gets more developed and the people will have a more modern lifestyle.

The life in Tubu can be difficult, some want to leave Tubu to start another life somewhere else. Because of the difficult situation and that the people do not have any money they cannot leave and therefore have nowhere to go. It is mainly older men that have the reason *nowhere to go* and this can be because they do not have the courage to leave to start another lifestyle. This is because they are so used to the traditional lifestyle in Tubu. Young people expressed a greater willingness to get an education and start a different lifestyle. It is also mainly younger people that leave Tubu to look for employment or get an education. The land attachment which is important now may switch to economic attachment in the future.

The men and women did not talk about different risks but they did talk about the risks differently. The women are more concerned about consequences for the household and the men are more concerned about the source of income. Generally the women worry about the risk on a more regular basis than men and they also expressed that the greatest risk often affected the people directly. The men often thought that the greatest risks are the risks with consequences that have negative impacts on the source of income hence risks that affect people indirectly. Regardless of gender people often talk about risk they have been exposed to. Secondly they talk about risk that their family or relatives have been exposed to. The risks the respondents mainly talked about were *wildlife, floods, drought, animal diseases and health problems*. The risks often have a negative impact on the harvest and cattle. This means that the respondents do not get enough food and struggle in their daily life. Because of lack of employment the respondents do not have money and this means that they are vulnerable to these types of risks. The *wildlife* can besides destroying their fields and injure or kill their cattle be a direct danger to the people, especially when they move around in the bush. When flooded the field gets destroyed but the limited movement is also a problem. It is dangerous to cross the rivers and the respondents thought about the problems when they have to go to Gumare for example for groceries or check-ups at the hospital.

To summarize the four categories that make men and women live in high-risk rural area of Tubu, Botswana is *livelihood, belonging, services* and *nowhere to go*. *Livelihood, belonging* and *services* are three factors that need to be fulfilled for the people in Tubu to overlook the risks and live in the high-risk area. These results can also be of importance in a post-disaster stage. For example when trying to relocate people it is important to fulfill these needs otherwise the people may move back to their community and be in a vulnerable situation again. It did not differ that much between men and women in what risk they talked about but it differed how they talked about it. Livelihood and especially the cattle were more important to the men than to the women and the whole family was important to the men, and not only the children or wife/husband which was the case for the women. The school was of more importance to the women than to the men.

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## Appendix A - Respondents

A list over the respondents that a concluded in the report, see Table 5. Besides this interviews four test interviews were done to evaluate the questions and the interpreter. The name of the respondents are left out to protect the integrity. Total 43 people were interviewed, 21 men and 22 women. In the age group 18-30 there was 7 men and 7 women interviewed, in age group 31-40 there was 6 men and 9 women interviewed and in age group 41+ there was 8 men and 6 women interviewed.

**Table 5. List over the respondents.**

Respondent nr.	Age	Age group	Sex	Employment
1	33	31-40	Men	Agriculture
2	52	41+	Men	Agriculture
3	36	31-40	Women	Agriculture
4	29	18-30	Men	Drought relief program
5	65	41+	Women	Agriculture/Drought relief program
6	53	41+	Women	Agriculture/Drought relief program
7	37	31-40	Women	Agriculture
8	62	41+	Men	Agriculture
9	53	41+	Women	Nothing
10	39	31-40	Women	Agriculture/Drought relief program
11	47	41+	Men	Agriculture
12	35	31-40	Women	Agriculture
13	36	31-40	Women	Agriculture/Drought relief program
14	34	31-40	Men	Agriculture
15	25	18-30	Men	Agriculture/Drought relief program
16	56	41+	Men	Agriculture
17	29	18-30	Women	Agriculture
18	18	18-30	Women	Brews alcohol
19	18	18-30	Women	Nothing
20	23	18-30	Men	Agriculture
21	41	41+	Women	Agriculture/Drought relief program
22	19	18-30	Women	Agriculture
23	21	18-30	Women	Nothing
24	23	18-30	Women	Drought relief program
25	18	18-30	Men	Drought relief program
26	44	41+	Men	Fishermen
27	27	18-30	Men	Bricklayer
28	47	41+	Men	Agriculture
29	47	41+	Men	Agriculture
30	47	41+	Women	Agriculture
31	37	31-40	Women	Agriculture
32	31	31-40	Women	Agriculture
33	35	31-40	Women	Agriculture
34	28	18-30	Men	Agriculture
35	52	41+	Men	Agriculture
36	30	18-30	Women	Farming/Drought relief program
37	39	31-40	Women	Farming/drought relief program
38	25	18-30	Men	Agriculture/Fishermen
39	31	31-40	Men	Agriculture
40	32	31-40	Men	Agriculture
41	40	31-40	Men	Agriculture
42	33	31-40	Men	Leather manufacture
43	67	41+	Women	Agriculture



## Appendix B - Interview guide

The interview guide used in the study. In the first four interviews, test interviews not considered in the result, the question about daily risks was not addressed to the respondents.

1. Can you tell me/us about your life here in Tubu? How is it living here? *We are interested in everything about how it is living here.*

- a) What is your name?
- b) How old are you?

2. Are you born here? Are your parents born here?

If no,

- a) What was the main reason for moving to this village?
- b) Were there any other reasons? Which ones?
- c) Did you have any other places in consideration before choosing this village? Why did you have these places in consideration?
- d) Was it your decision or someone else's to move here? Whose?

3. What is your current mean of subsistence?

- a) What is the main mean of subsistence for the people in Tubu?

4. What are the advantages with living here in Tubu?

- a) Are there any other advantages with living here?

5. What are the disadvantages with living in Tubu?

- a) Are there any other disadvantages with living here?

6. What is the main reason for staying here?

- a) Are there any other reasons for staying here? Which ones?
- b) Have you considered leaving this village? If yes, why?

7. What are the risks regarding living in Tubu?

Is it okay if we continue? There are not so many questions left. We would like to ask some questions about dangers. We are interested in all kinds of dangers.

8. According to you what are the dangers regarding living in Tubu?

- a) Have you or your family been exposed to this danger?
- b) Do you do anything to prevent this danger from happening? If yes, what? If no, why?
- c) What are the consequences of it?
- d) Do you do anything to reduce the consequences? If yes, What? If no, why?
- e) Do you worry that you will be exposed to it? Do you worry that your relatives/children will be exposed to it?
- f) How often would you say that you think of the danger?

- g) Does it affect your lifestyle? How?
- h) Does it affect your family's life? How?

**9.** Are there any other dangers according to you?

If yes, ask the questions in number 8 again.

**10.** Can you rank these dangers, most dangerous first and least dangerous last?

**11.** Have you been interviewed about dangers before?

**12.** Did you know about these dangers before moving here?

- i) If yes, why did you move here anyway?

Thank you for your time!

Appendix C – Pictures



**Figure 11.** This logs used to cross the river when flooded.



**Figure 12.** This bridge did not hold last big flood in 2010.



**Figure 13. A house destroyed by the flood.**