

RURAL LIVELIHOODS AND VALUES ON SANITATION IN NEPAL

A LIVELIHOOD STUDY TOWARDS THE ROLE OF CULTURAL VALUES AND APPROACHES ON SANITATION IN THE IMPLEMENTATION OF SANITATION PROJECTS IN TWO DIFFERENT RURAL DISTRICTS IN NEPAL



Master Thesis

Susan Hoeflaken

August 2011



Universiteit Utrecht

UN HABITAT
FOR A BETTER URBAN FUTURE



Pictures front page:

From left to right, upper row first.

Pit-latrine in Mohamedpur; Flat Terai- area; Tharu community; Locals in Martadi; Middle Hills- area; Pit-latrine in Martadi.

Rural Livelihoods and Values on Sanitation in Nepal

A Livelihood Study towards the Role of Cultural Values and Approaches on Sanitation in the Implementation of Sanitation Projects in Two Different Rural Districts in Nepal

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'The State Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international cooperation based on free consent.'

(Article 11 (1) International Covenant on Economic, Social and Cultural Rights, UNGA, 1966)

'The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health.'

(Article 12 (1) International Covenant on Economic, Social and Cultural Rights, UNGA, 1966)

The ICESCR was ratified by 160 countries in December 2008, the government of Nepal also signed and ratified the ICESCR.

And the thing is: we are different, and people are different. Community people have their own way of thinking, and we Kathmandu people have our own way of thinking. And we have to go their way, not our way, because they are the users.

(N.L. Shrestha, 2011)

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So thank you all,

Sincerely,

Susan Hoeflaken

Executive Summary

It is internationally accepted that all people have the right to water and sanitation, this right has a legal foundation in several treaties (COHRE et al, 2008: 11). Worldwide there is a huge sanitation problem, around 2.6 billion people do not have access to improved sanitation facilities.

Southern Asia is lagging behind on reducing the amount of people without access to improved sanitation. The status of basic sanitation coverage in Nepal is low, only 43 percent of the population has access to sanitation facilities (GoN, 2010).

The sanitation sector of Nepal collaborates to achieve the sanitation goal of the Nepalese government, an open defecation free Nepal in 2017. To achieve a full cooperative sanitation sector a sanitation and hygiene master plan is written. The master plan has to help the stakeholders in effective planning, budgeting, human resource mobilization, implementation, monitoring and evaluation and follow up of hygiene and sanitation programmes. (GoN, 2010: ii) The first sanitation program which will follow this master plan is the Global Sanitation Fund programme. The programme supports the sanitation sector by funding mechanisms for software sanitation programmes. Within the Global Sanitation Fund there is no room for hardware implementation of sanitation facilities. The Global Sanitation Fund programme states that it is people centred and demand driven. Nevertheless it is already decided that every district will get a district wide ODF campaign which includes a school programme, and an implementation of a media and communication strategy.

Most used software sanitation programmes in Southern Asia are 'Community Led Total Sanitation', 'School Led Total Sanitation', 'Integrated WATSAN', and 'Social Marketing'. These approaches all ensure the importance of people centred sanitation programmes and focus on behavioural changes. Nevertheless the approaches differ, and to know which approach is appropriate for the district of implementation an extensive social research is recommended. An approach to conduct a research to people's lives and cultures, is the livelihood approach. To ensure sustainable livelihoods, the local aspirations and priorities have to be in one line with the planned rural development (Zoomers, 2008). The livelihood approach examines the livelihoods of people by five assets: human-, physical-, social-, natural-, and financial capital. In this thesis the livelihood approach is used to examine the livelihoods of people living in Bajura and Bardiya district, two districts where the Global Sanitation Fund programme will be implemented in the coming year.

Bajura is characterised by its low state of development. Within the district there is an official state of food insecurity and people have many problems with their health, which are also related to waterborne diseases. The district of Bajura is an inhospitable district, where there is no possibility to travel with vehicles. There is no water supply scheme, people use water direct from rivers and streams. The sanitation coverage of Bajura is the lowest of whole Nepal, only 11 percent of the households has access to sanitation. Within the district the social capital is relatively low, people have less contacts outside their village and they have only little reciprocity relationships. According official statistics, the district is poor, it is one of the most poor districts of Nepal. It is found that there is a major difference between the relative incomes of the inhabitants. Some households have a high income, while many others have a very low income. The expenses for basic needs, such as food, are higher in Bajura as in other districts. This is caused by food insecurity and transport costs.

Bardiya is a district which differs much from Bajura. The district is located on a fertile plain, food insecurity is therefore not a problem in Bardiya, where most people are (subsistent) farmers. In Bardiya there is a problem regarding waterborne diseases, especially during the wet season. The infrastructure of the district is well developed, the district has two main paved roads and multiple unpaved roads which are also appropriate for vehicles. Most households use water from hand pumps, this water is not safe, while most of the people believe it is safe from diseases. The sanitation coverage of Bardiya is lower than the mean of Nepal, 39% of the district households has access to improved sanitation facilities. In Bajura people help each other much in the agricultural high seasons. Planting and harvesting are the base of these reciprocity relationships, people also seem to have many contacts outside their own village. The district is flat and much land is available for agricultural purposes. The land is unequally divided, only a few households own most of the land. Bardiya is seen as an average district within Nepal, regarding their HPI score. Though there are many people who have a negative relative income. Many households know people who work abroad and many people receive remittances, mostly from India and the Middle-Eastern countries.

In both districts there are people who understand the link between sanitation, hygiene and health, and people who do not. It is found that there are still communities in Bajura which have conservative traditional values on the use of sanitation facilities for women during their menses. In Bardiya most people use soap to wash their hands, while in Bajura most people use ashes and mud, the more traditional methods of hand washing. The method of hand washing has a relation to the educational level of the head of the households in the research. If the head of the household has a higher educational level, the household uses soap more often. Most people mention other reasons than health why sanitation facilities are necessary. People who have more access to certain technologies as internet and mobile phones, do mention health more times as the main reason why sanitation facilities are necessary.

The livelihoods and values and approaches on sanitation use, that are present in the districts, will influence the effectiveness of a sanitation programme. Bajura is a remote district, where the modern values are not completely spread. This causes cultural challenges for the implementation of a sanitation programme. It will be difficult for the sanitation programmes to get support in all the communities of the district, when these traditional values and approaches on sanitation use are still in place. Besides the traditional Hindu values, more values and approaches will be a challenge for the sanitation programmes in Bajura. Not all people understand the link between sanitation, hygiene, and health. The sanitation programmes which are being implemented, should therefore start from the beginning. There is no knowledge base where the sanitation programme can rest upon and the behavioural change is not started yet.

Bardiya is a district which has less challenges regarding the livelihood indicators for the implementation of a sanitation programme than Bajura. The main challenge in the Bardiya district regarding the cultural values and approaches for the implementation of a sanitation programme is the stiffness of the people. People understand that it is better for their health to install sanitation facilities, while they hold on to their traditional practice of open defecation.

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Acronyms and Abbreviations

CBS	Central Bureau of Statistics
CGD	Child Gender Differently
CIA	Central Intelligence Agency
CLTS	Community Led Total Sanitation
CPM	Country Programme Monitor
CSC&CO	Chartered accountants firm
DDC	District Development Committee
DWSO	District Water Supply Office
ECTS	European Credit Transfer System
GoN	Government of Nepal
GSF	Global Sanitation Fund
HDI	Human Development Index
HPI	Human Poverty Index
ICESCR	International Covenant on Economic, Social and Cultural Rights
MDG	Millennium Development Goal
MPPW	Ministry of Physical Planning and Works
NCB	National Coordinating Body
N.D.	No Date
NGO	Non Governmental Organisation
OD	Open Defecation
ODF	Open Defecation Free
RFP	Request For Proposal
SACOSAN	South Asian Conference on Sanitation
SCNSA	Steering Committee for National Sanitation Action
SHP	Sub-Health Post
SLTS	School Led Total Sanitation
UN	United Nations
UNDP	United Nations Development Programme
UNGA	United Nations General Assembly
UNICEF	United Nations Children’s Fund
UNOPS	United Nations Office for Programme Support
UN-Habitat	United Nations Human Settlement Programme
VDC	Village Development Committee
WASH	Water Sanitation and Hygiene
WATSAN	Water and Sanitation
WHO	World Health Organisation
WSSCC	Water Supply and Sanitation Collaborative Council

1. Introduction

Nepal is on many fronts an interesting country. Culturally, because it has a rich history including the birth of the Buddhism culture. Geographically it is a fascinating country, because of the enormous physically and climatically differences, the cool Himalaya range in the north and the hot flat Terai jungle in the south. For development geographers Nepal is also very interesting. Nepal is bounded by two vast countries that are nowadays flourishing in economic growth and welfare. Within the country there are also enormous differences between the urban and rural areas and between the valleys, the Terai region and the more remote districts.

Nepal is a traditional low income developing country. Most people still live from (subsistent) agriculture (CIA Worldfactbook, 2011) and Nepal has the second lowest HDI of Southern Asia (UNDP, 2011). Along with traditional characteristics of low income development countries, there are some more problems present under the population. Visible in the census of 2001 (CBS, 2009) is that only 54 percent of the population above 6 years old was able to read and write. Divided under males and females this was respectively 65 and 42.5 percent. Next to high illiteracy rates under the population, the population of Nepal suffers under poor living conditions. Most of the population lives in the rural areas (CIA Worldfactbook, 2011), where the living conditions are less developed as in the urban areas. Hospitals are not near, and unskilled personnel is running the sub-health posts in the area. Still 19.6 percent of the population does not have access to water supply, and 57 percent does not have access to any sanitation facilities. These rates are off course a lot higher in the rural areas, some districts even had a sanitation coverage of less than 11 percent in 2010. (SCNSA, 2010) When people do not have access to safe water supply, sanitation, or hygiene, there will be a higher risk for their health condition. Diarrhoea alone is already responsible for 1.8 million deaths a year worldwide, of which 90 percent are children under five. (WSSCC, 2010)

Although the sanitation sector in Nepal remains weak, a lot is done in the sector in former years. The government of Nepal founded the Department for Water Supply and Sewerage in 1972, which is the leading agency in Nepal, to deal with water and sanitation problems. Since the mid 1990s more organisations started working in the sanitation sector in Nepal. And in 1998 the Steering Committee for National Sanitation Action (SCNSA) was established. The SCNSA consists of all major stakeholders working in the sanitation sector in Nepal: sanitation experts, NGOs and governmental institutions. (GoN, 2010) Nowadays there are several large sanitation projects from different institutions going on all over Nepal, all these programs have their own goals, and own methods. The SCNSA therefore established the Sanitation and Hygiene Master plan last year, to increase the coherence between the different sanitation projects. All new sanitation projects should follow the guidelines that are stated within this master plan, this will make sure that the projects will all be in coherence with each other. (GoN, 2010)

The first sanitation programme that follows the Sanitation and Hygiene Master plan is the Global Sanitation Fund (GSF) programme. This programme boosts expenditure on sanitation and hygiene to help large numbers of poor people to attain sanitary facilities and to adopt safe hygiene practices. (UN-Habitat, 2011) The programme will be held in five districts, and will be started this year in two districts. These are the Bardiya and Bajura district. These two districts are quite different. Both in

Bardiya and Bajura mostly rural communities are living, but they both have their different and distinct values and norms that are related to their culture and ethnicity. The districts also experience differences due to their specific geographical location. The impact of a large sanitation programme as the GSF is therefore dependent on the synchronization, harmonization and unison between the cultural values and approaches towards sanitation use and the planned implementation of the programme. Specific local values and approaches towards sanitation use have to be identified, this will lead to a more successful and sustainable project implementation in the future. The problem statement of this study will therefore be:

What are the main points of attention, with the implementation of a sanitation programme, regarding cultural values and approaches towards sanitation in the Bardiya and Bajura district?

To answer the problem statement four sub-questions will be used.

- *What is the content of the Global Sanitation Fund programme for the Bajura and Bardiya district?*
- *Which different livelihoods can be distinguished in the Bajura and Bardiya district?*
- *What is the relation between the livelihoods of households within the two districts and their cultural values and approaches towards sanitation use?*
- *Which livelihood aspects and cultural values and approaches have an influence on the Global Sanitation Fund programme as planned in the Bajura and Bardiya district?*

In the coming chapter there will be a discussion about the theoretical background. An analysis will be given on the context of sanitation problems worldwide and in Southern Asia, the international efforts and on the paradigms within sanitation. The third chapter will be focused on the contextual background, both national and more specific on the two research districts. This is followed by a methodology chapter. Within this chapter the research methods will be explained, and the methodological limitations of the research will be given. The sub-questions will be answered in the chapters five to eight. Each sub-question shall be answered in a separate chapter with a combination of qualitative and quantitative research. Finally the problem statement will be answered in a concluding chapter. This same chapter will include a discussion and recommendations.

2. The Sanitation Theme

2.1. Introduction

It is internationally accepted that all people have the right to water and sanitation. It is a fundamental human right which has a legal foundation in several treaties. (COHRE et al, 2008: 11) The primary basis for the right to water and sanitation is mentioned in the International Covenant on Economic, Social and Cultural Rights (ICESCR) as mentioned in the beginning of this thesis.

In this chapter the thematic context of sanitation is explained and discussed. Information is given on the state of sanitation in the world and in Southern Asia, as well as the history of the main sanitation efforts. Subsequently the main approaches of sanitation are discussed and the livelihood approach which is used in this research is examined. At the end of the chapter there will be a conceptual model, which gives information about the expected influences of the livelihood approach towards sanitation, and the implementation of a sanitation programme in this study.

2.2. Sanitation Status

2.2.1. Worldwide

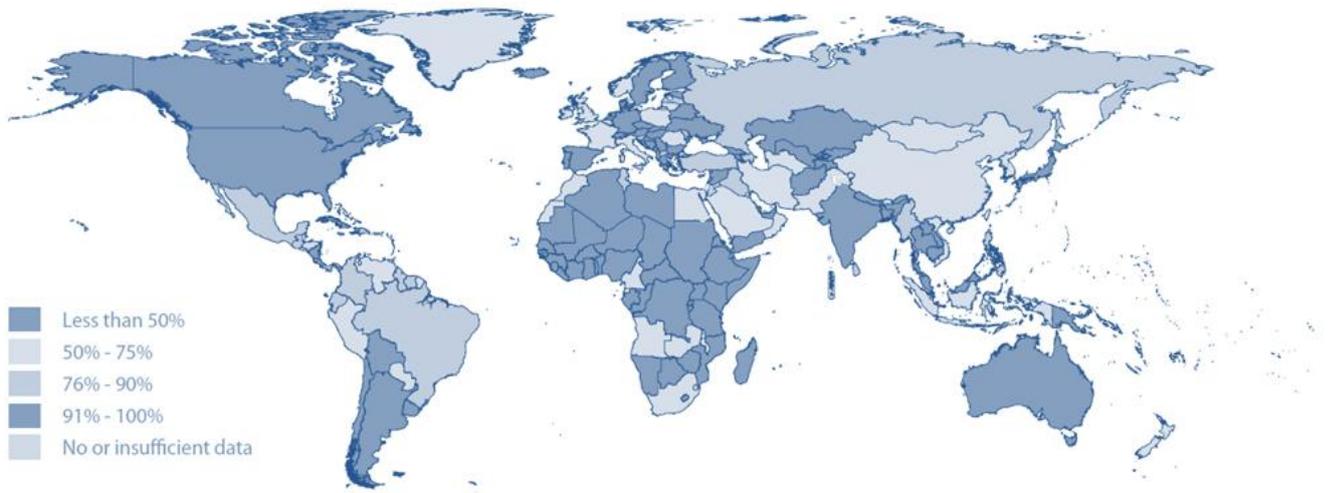
Worldwide there is a huge sanitation problem. Around 2.6 billion people do not have access to improved sanitation facilities, this will probably increase to 2.7 billion people in 2015. (UN, 2010) Map 2.1. shows the distribution of improved sanitation coverage worldwide in 2006. Visible is the lag of Sub-Saharan Africa and Southern Asia. In Sub-Saharan Africa only 31 percent of the people had access to improved sanitation in 2006, this was 33 percent for Southern Asia. (WHO, 2008: 8) There is a huge difference between urban and rural sanitation coverage. This is shown in map 2.2. and 2.3. It is visible that in rural areas there is much less sanitation coverage, in comparison with urban areas. This is particularly the case in the developing world.

Box 2.1., Improved sanitation facilities

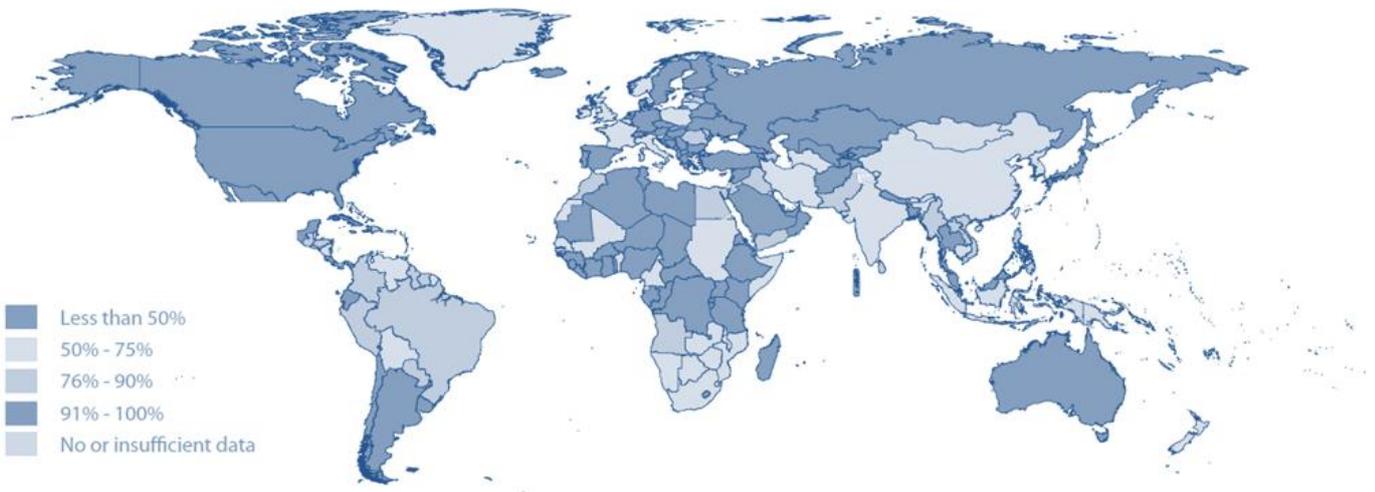
The World Health Organisation defines the access to improved sanitation as following. *“The share of the population with at least adequate excreta disposal facilities”*. Humans, animals and insects have to be prevented from contact with excreta. The facilities have to be private or shared, if public it does not count in the estimation. Facilities can range from simple pit latrines to modern flush toilets with sewerage.

(WHO, 2008: 6)

The most important problem that comes along with the lack of access to sanitation facilities, is the bigger chance on illness. At all times, more than half of the poor people in the developing world are ill from causes that are related to the lack of hygiene, sanitation and water supply (WSSCC, N.D.). Around 18 percent of all deaths, under children under five, are due to diarrhea. This has as a consequence that diarrhoeal diseases are the leading cause of child death on a global scale. Diarrhoeal diseases are mainly spread by faecal-oral contact. To prevent diarrhoeal diseases different preventive measures are needed. This includes the improving access to safe drinking water and adequate sanitation. (Botting et al, 2010) If one accepted the fact that lacking access to sanitation facilities is related to having a bigger chance to be ill, one must see the serious consequences for communities when lacking sanitation facilities. If people are ill, they can not work, or they drop out of school, this has serious consequences for the national and local economy, environment, and children’s education. (WSSCC, 2010: 1)



Map 2.1., Improved sanitation coverage 2006 (WHO, 2008)



Map 2.2., Improved urban sanitation coverage 2006 (WHO, 2008)



Map 2.3., Improved rural sanitation coverage 2006 (WHO, 2008)

2.2.2. Southern Asia

Southern Asia is lagging behind on reducing the amount of people without access to improved sanitation. Approximately 64 percent of the population, almost 1 billion people (WaterAid, 2008), lacks access to basic improved sanitation, and the gap between the urban and rural areas remains enormous. (UN, 2010) In the rural areas the sanitation coverage is still remaining extremely low, while the urban areas are revolting.

To review the progress in sanitation and to help generating political will in the countries of Southern Asia, the SACOSAN (South Asian Conference on Sanitation) is established. Within this organisation the ministries who cover the sanitation sector of the countries in Southern Asia are represented. These ministries have several meetings with all national stakeholders in sanitation, and therefore represent the sanitation sector of their country. (SACOSAN, 2011)

2.3. Historical Efforts in Sanitation

Rich countries and international organisations first began to give assistance for water and sanitation through the World Bank in 1961. (Botting et al, 2010; Grover, 1998) The assistance for sanitation facilities were until the mid 1990s part of the water policies. Most of the funds went to the supply of water facilities, and the coverage gap between water and sanitation supply increased. In 2004 water supply had a worldwide coverage of 83.3 percent, while sanitation had a worldwide coverage of 59.1 percent (WHO, 2006).

In the 1970s the United Nations organized several conferences on water policies. In 1976 the first UN conference on Human Settlements, Habitat, was organised. In this conference the importance of water supply and sanitation in the rapid growing cities in third world countries was emphasized. (Grover, 1998) These conferences have led to several programmes that concentrated on water policies.

More cooperation in the water and sanitation sector started in the 1980s. The Water Supply and Sanitation Collaborative Council (WSSCC) was established, and tried to bring more cooperation between the different policies in water and sanitation of bilateral and unilateral aid. The UN organisations working on water and sanitation also started to have more meetings and to cooperate with each other in this decade. (Grover, 1998)

The sanitation theme gets more important in international policies and treaties after 2000. Within the Millennium Development Goals (MDGs) the improvement of the world sanitation status is mentioned. Target 7.C indicates that by 2015, the proportion of people without sustainable access to basic sanitation has to be halved. (UN, 2011) This ensured that within more countries there was need to a good working policy on sanitation, so the goals could be met.

Until the end of the 1990s almost all water and sanitation policies were, as it is called, 'hardware' policies. The policies were mainly focussed on the installation of water supply and latrines. This changed with the upcoming of Community Led Total Sanitation (CLTS), in the beginning of the 2000s in Bangladesh. (WSSCC, 2011) The CLTS approach was the beginning of a new era in the sanitation policies, the 'software' policies. 'Software' policies focus more on awareness raising, and education on the use of sanitation and hygiene, instead of only the installation of toilets and water supply. The idea is, when people get educated about the use of sanitation and hygiene, the policies will be more effective than when only toilets are build.

2.4. Software Approaches on Sanitation

The 'software' approaches are, as mentioned above, the major approaches in sanitation policies nowadays. However these approaches all ensure the importance of people and behavioural changes there are a lot of differences among the approaches. Most of the 'software' sanitation projects which are implemented at the moment can be summarised under a few major approaches. These approaches will be discussed in the coming paragraph.

2.4.1. Community Led Total Sanitation

The Community Led Total Sanitation approach was the first 'software' approach in the sanitation sector that was established. The CLTS approach is founded by Dr. Kamal Kar in the begin 2000s in Bangladesh. The CLTS approach is developed as an answer to the subsidised sanitation programmes that did not succeed in getting people wanting, building, paying and using latrines. (WSSCC, 2011) CLTS is an integrated approach, with the use of 'software', as well as 'hardware', to achieve and sustain open defecation free (ODF) status. To achieve this ODF status a whole community has to use sanitation facilities. (Kar & Chambers, 2008) Previous policies did not achieve ODF because the behaviour of people did not change. The CLTS approach consists of three strategies:

- Achieve ODF declaration in communities by facilitators and/or the local committee
- Wider application of tools which recognise the local rural knowledge for instant community actions
- Promotion of low cost toilets which are locally appropriate

According the Sanitation and Hygiene Master plan there is one major weakness of the CLTS approach. There are no, or not enough post ODF interventions. This is caused by a lack of permanent institutional set up and flexibility in financial support. (GoN, 2010: 16)

2.4.2. School Led Total Sanitation

An approach which is based on the CLTS approach, is the SLTS approach. The first difference is that the SLTS approach determines the boundaries of a project area, not on the community, but on school catchment areas. The major difference with the CLTS approach is that the SLTS approach has, unlike the CLTS approach, a strong institutional backing by schools and child clubs. However the name predicts that only schools are the institutional backing of this approach, all kinds of community organisations are involved to achieve ODF in the school catchment areas. (Adhikari & Shrestha, 2008) The SLTS approach works according three major strategies:

- Installing child friendly water and sanitation facilities in schools and ODF zones in it catchment areas trough for instance child clubs
- Trying to awake communities through mass sensitisation tools, techniques and activities
- Partnership and collaboration under the VDC, NGOs and local groups for planning and cost sharing

A large disadvantage of the SLTS approach is that next to the 'software' programs in schools and community organisations, there is need of additional funds to construct the water and sanitation facilities in the schools. (GoN, 2010: 16)

2.4.3. Integrated WATSAN

WATSAN is the abbreviation of water and sanitation. It is a term that is used a lot in the field of water and sanitation and most of the time in different contexts. The integrated WATSAN approach focuses only on sanitation in areas which already have a water supply, and not, as the name indicates, on water supply itself. The focus of the integrated WATSAN approach is on two main points:

- Building more toilets during a project period in areas that are applied to the water supply scheme
- Setting up, mobilise and develop the capacity of users committee's in the project areas

The benefits of this approach are that it increases the toilet coverage, and that it reduces the gap between water and sanitation supply. The disadvantage of the approach is that projects are only held in areas which have improved water supply. (GoN, 2010: 16) The integrated WATSAN approach is extended from the former WATSAN policies which only focused on 'hardware' implementation of sanitation. In this approach the 'software' aspect is included with capacity development of users committee's.

2.4.4. Social Marketing

The social marketing of sanitation is a relative new approach which is established to replace the construction that worked with health education (Unicef, N.D.). Commercial marketing is all about creating demand for social goods and services, which is the same for social marketing. Social marketing within the sanitation sector tries to create a demand for sanitation facilities. The difference between social and commercial marketing is that social marketing is not only beneficent for the seller, but also for the target users and the community. The behaviour of the target users will be influenced by the marketing campaign, which will be beneficent for the whole community. (UN-Habitat, 2006: 25-26) The social marketing of sanitation focuses on four characteristics:

- The sanitation facilities used have to respond on the needs of the people
- The costs have to be as low as possible, different products with different costs have to be used
- The supply chain of the sanitation facilities has to reach every household
- Target users have to be informed that the facilities exists, their advantages, costs and where and how to get it (UN-Habitat, 2006: 28-29)

The social marketing of sanitation is a new approach to ensure that people want to have their own latrine. The most important part of this approach is that the public sector enables the local markets to help the supply of sanitation facilities. (Unicef, N.D.)

2.5. The Livelihood Approach

When conducting a research to values and approaches, it is important to see these values and approaches in a broader context. Values and approaches are part of one's culture, a design for living. Values and approaches are part of one's culture, while the values and approaches are not the exhaustive part of one's culture. Other parts of culture are one's behaviour, practices and material objects. (Macionis & Plummer, 2005: 106) An approach to conduct a research to the other parts of

people's culture, is the livelihood approach. This approach studies the assets of a household which include behaviour, practices and material objects.

Present day livelihood studies are derived from the term 'sustainable livelihood', and since the establishment in 1991, the livelihood approach has become popular by researchers and development practitioners (De Haan, 2006). The term sustainable livelihood was first used by Chambers and Conway (1991: 6), they defined the term as following: "*A livelihood comprises the capabilities, assets and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term*". Since the establishment of the term, and the approach in the begin 1990s, a lot of effort has been made to understand the rural livelihoods, and to bring rural development in one line with the aspirations and priorities of rural people (Zoomers, 2008). Livelihood approaches place people and their priorities at the centre of development. The focus is on poverty reduction, empowering of the poor and on support to access to assets. (Eldis, 2011)

The assets mentioned by Chambers and Conway (1991: 6) are refined into five , so-called, capitals. These capitals are: human-, natural-, physical-, financial-, and social capital. The capitals are seen as the five fields where people build there lives upon though livelihood strategies. (De Haan, 2006) The capitals can be interpret as possible:

- *Human capital*: The content of people's human capital dwells within themselves. This includes one's education, skills, knowledge, experience, health and ability to work.
- *Natural capital*: This capital consists of natural resources as land, soil and water.
- *Physical capital*: This is the store of human-made resources. Examples are infrastructure and producer goods.
- *Financial capital*: Financial capital can be translated as the financial resources of one. This can be money and assets which can easily be swapped into money.
- *Social capital*: Relationships are the base within social capital. For instance: (in)formal networks, memberships and trust based relationships. (Eldis, 2011; De Haan, 2006)

2.5.1. Livelihood Research and Sustainable Sanitation

To achieve sustainable sanitation, an approach is needed in which the implementation of the programme meets the needs of people. The software approaches which are mentioned in paragraph 2.4., do all endorse the importance of connecting the sanitation programme to the specific needs of the communities. Within the water and sanitation sector, the livelihood approach is therefore also a widely used approach. The livelihood approach has, in fact, broadened the focus in the water and sanitation sector. Rather than focusing purely on water and health impacts there is now a bigger recognition of one's demands and priorities. It is important to understand the role of water and sanitation within wider livelihoods, this should influence programmes and policies. (Eldis, 2011) The five capitals mentioned in the livelihood approach do all influence the implementation of a sanitation programme. In the following text the capitals are mentioned, with the predicted influence they can have on the implementation of a sanitation programme. In general it is expected that when people have score higher on the capitals they will have more modern values and approaches towards sanitation. This will ease the implementation of a sanitation programme.

Human Capital

It is expected that when people score higher on human capital (they are able to work, have a high educational level, and are healthy), they will have more modern values and approaches towards sanitation use. This eases the implementation of a sanitation programme. There can also be other influences from human capital related indicators.

Sanitation programmes with a strong dependence on sanitation and hygiene education will have more effect in communities who have higher attendance rates in education (DWSS, 2006: 9). When all children in a household do not attain school, the household will not benefit from the sanitation programme, when it is only connected to schools. The attendance rates on school can therefore influence the implementation of a sanitation programme. There is another characteristic that can influence the planning of a sanitation project, this is related to health. In communities where people are more healthy the impact of health education on the demand of latrines will be lower than in communities where people are sick more often. When there are not many diseases with a direct link to the poor state of sanitation in a community, other reasons than health have to be mentioned to endorse the need of sanitation facilities. The construction of the sanitation programme will therefore be dependent on the human capital of the target population.

Natural Capital

The general expectation is that when people have more access to capitals they will have more modern values and approaches towards sanitation use. This is therefore also applicable on natural capital. On the other hand, access to natural resources can also have other influences on the implementation of a sanitation programme.

A problem which can arise, is that people without land and space for constructing a sanitation facility are excluded from the sanitation program. (GoN, 2010: 3) When it is unknown if people do have enough space to build their sanitation facility is unnecessary to promote the build of an own sanitation facility.

Physical Capital

Having more access to physical capital, will increase the modernity in values and approaches towards the use of sanitation. Physical capital does not only influence the values and approaches of people, but they also influence the planning and integration of the sanitation programme itself.

The most important variable of physical capital, with respect to the implementation of a sanitation programme, is infrastructure. First transportation is important for implementation. The accessibility of the programme area is important for transport of materials and practitioners. (UN-Habitat, 2006: 35-37) Connected to the transportation, are costs. When it is more difficult to reach the project area the costs of the programme will be higher than when the area is more easy to reach. Another part of infrastructure is the possibility of communication. When a programme area has access to television, radio and mobile phones, it is possible to use these media in the implementation of the sanitation programme.

Another important part of physical capital is the existence of water and sanitation supply. It is logic that when people are already connected to improved sanitation services, a programme is not necessary anymore, or at least it is not necessary to involve the whole community in the programme. When people are already connected to safe water supply it is not necessary to invest in

a whole water and sanitation programme, and forms of latrines, which need water supply, are possible. (UN-Habitat, 2006: 14-19)

Financial Capital

Financial capital is explained as the financial resources that someone can touch easily. The availability of financial resources in one's life can influence their values and approaches. Following the general prediction, it will increase the modernity of people's values and approaches towards sanitation use. Financial capital can therefore influence the implementation of a sanitation programme in other ways.

It is quite obvious that financial capital has an influence on the implementation of a sanitation programme. When people can afford it, to build themselves sanitation facilities, it will be more likely that they will invest themselves in sanitation facilities than when they can not afford it. Before implementing a sanitation programme it is therefore important to analyse the target group, to make sure if the target group can afford it to build their own toilets. When people do not have the money to build their own sanitation facilities, it will not be enough to only implement a software programme. (GoN, 2010: 3) People can understand the need of sanitation through the programme, but if there is no money to invest in the facilities, the programme turns out to be useless after all. On the other hand, when people do have the money themselves to invest it is also useful to know. Investments can be saved and more people can be reached with the same programme if people who do have the money to invest themselves, have to invest themselves in sanitation facilities. A good understanding of the financial situation in a community is therefore important, before implementing a sanitation programme.

Social Capital

Followed by the general prediction it is assumed that people which have more social relationships have more modern values and approaches towards sanitation use than people who do not. The presence of social networks, can influence the implementation of a sanitation programme.

When implementing a software sanitation programme, the use of networks can be very useful. When many people are connected to a network, like a religious institution or a school, these organisations can be used in the programme. The CLTS and SLTS programmes are classic examples of using these, already existing, social networks within their target groups, to achieve sustainable sanitation. Within the networks people feel solidarity to each other, and they will comply with the norms and values that are existent within the networks. (Ultee, Arts & Flap, 2003: 112) So when programmes will focus on the networks, and these networks accept the behavioural changes of sanitation use, it is most likely that the people in the network will all accept these values. The interconnectivity of a community is therefore important for the successful implementation of a sanitation programme.

2.6. Conceptual model

This study is set as a livelihood research. To clarify the expected influences on the implementation of a sustainable sanitation programme a conceptual model is made. The conceptual model is shown in figure 2.1. .

Left in the conceptual model, the assets of the livelihood approach are mentioned: Human-, Physical-, Social-, Natural- and Financial capital. How these assets are measured, is shown in

appendix 1, the operationalisations. A livelihood assessment is made of the assets. It is expected that the livelihood of the households has an influence on the cultural values and approaches on the use of sanitation facilities.

Right in the model, the planned implementation is mentioned. In this particular case the Global Sanitation Fund of Nepal is influencing the sanitation programme. This GSF programme is on its turn influenced by three major institutions. The funding organisation, WSSCC; the national sanitation policy, the Sanitation and Hygiene Master plan; and the implementing agency, UN-Habitat.

To achieve sustainable sanitation, the sanitation programme and the cultural values and approaches of the target population, have to be matched. In the most ideal situation this will be a reciprocal relationship. The sanitation programme influences the cultural values and approaches on sanitation use, and the cultural values and approaches will also influence the sanitation programme. The livelihood assessment will also influence the implementation of the sanitation programme. In that way the programme will be tuned on the target communities. Through the programme, the livelihoods will also be influenced, people receive knowledge about hygiene and sanitation, and hopefully they start using sanitation facilities.

Eventually sustainable sanitation is reached through the cultural sensitive implementation of the sanitation programme.

2.7. Conclusion

Every person on the world has the right to a good health, and therefore has the right to improved sanitation. Still more than 2.6 billion people do not have access to improved sanitation. Most of these people live in Sub-Saharan Africa and Southern Asia. Most people without sanitation live in rural areas. With the rising importance of sanitation in international conventions, like the Millennium Development Goals, the need of new and better sanitation policies is increased. The past has shown that the hardware sanitation policies, which install latrines, do not have the required success. There is need of software policies, approaches that focus on behavioural changes.

The most important software policies at this moment are: Community- and School Led Total Sanitation, the Integrated WATSAN, and Social marketing. There are differences between these approaches, while the most important linkages are the focus on the community itself, and the culture sensitivity of the projects.

A form of research that tries to assess the lives of people is the Livelihood approach. The Livelihood approach focuses on five assets: Human-, Physical-, Social-, Natural-, and Financial capital. These five assets assess the lives of people within a community, and can be useful to implement a culture sensitive sanitation programme, to ensure sustainable sanitation. It is assumed that when people have more access to the livelihood assets, they will have more modern values and approaches towards sanitation use, which will ease the implementation of a sanitation programme.

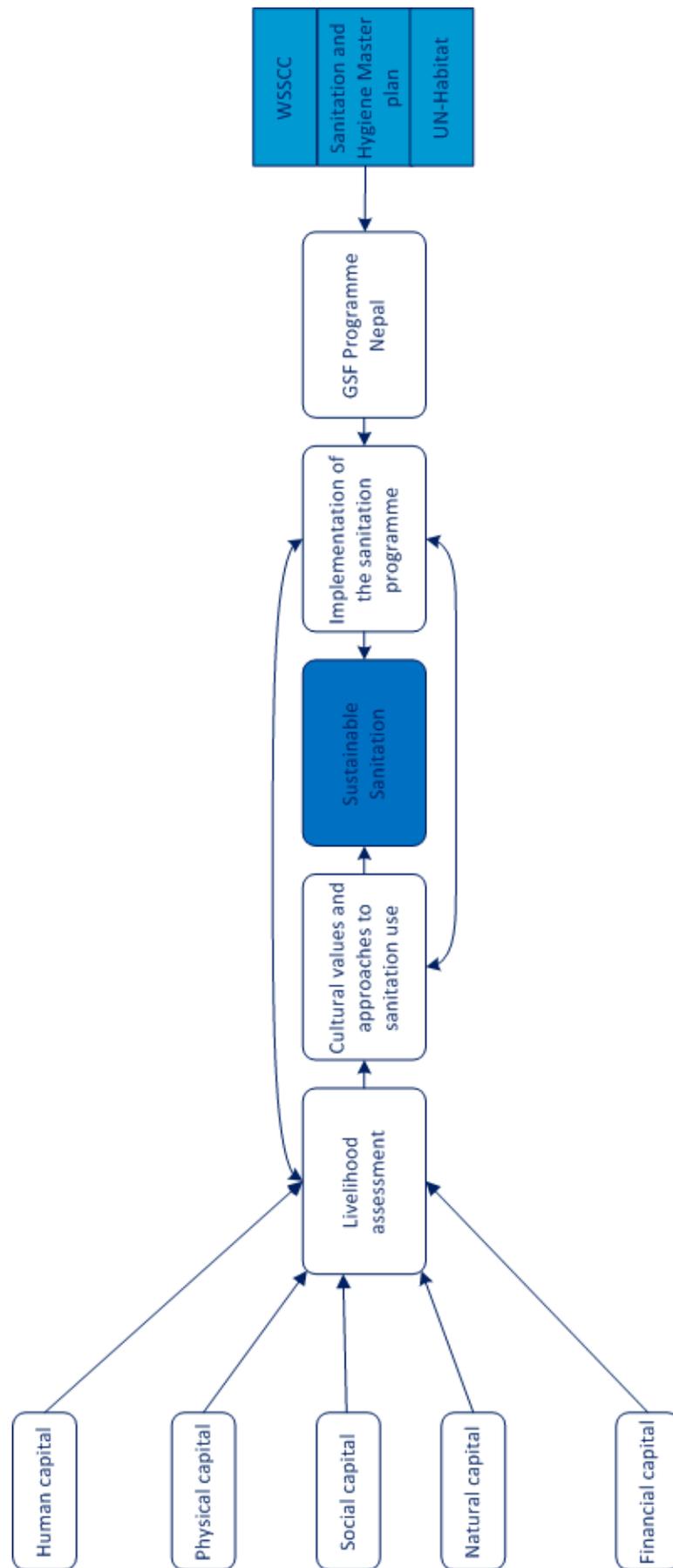


Figure 2.1., Conceptual Model

3. Context

3.1. Introduction

When conducting a livelihood research, it can be difficult to delimit all the information that has an influence on the lives of people, and therefore on the research. Not only the direct livelihood has an influence on the lives of the people, also the livelihoods of people surrounding the research population has influence, as well in surrounding villages, district and even countries. This chapter will help to review the lives of the people in the research districts, in a broader perspective. Both national as international, both in surrounding sectors as in the sanitation sector.

3.2. Geography of Nepal



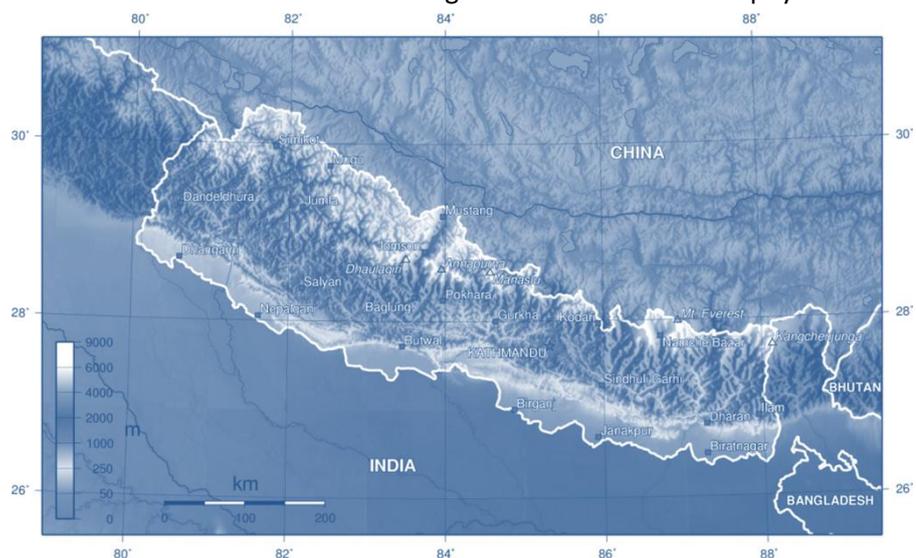
Map 3.1., Nepal (utexas.edu, 2011)

Nepal is one of the nine countries in the sub-continent Southern Asia (UN, 2010). The specific location of Nepal is between 26° 22' north and 30° 27' north latitude and between 80° 4' east and 88° 12' east longitude (Shrestha, N.D.: 1). Nepal is located between two vast countries, China in the north and India in the east, south and west. In the north, Nepal is

bounded by the Tibetan Territory of China. Between Tibet and Nepal lays the great Himalaya range as a natural boundary. The total surface of Nepal is 147.181 square kilometres (CIA Worldfactbook, 2011), of which about 75 percent consists of mountains and hills including river basins and plateaus (Shrestha, N.D.: 2). Broadly speaking the altitude of land increases from the south towards the north. The lowest point of altitude is 61 metres above sea level in the Terai and the highest point of altitude is the Mount Everest with 8848 metres above sea level in the Himalaya.

Looking at the altitudes map of Nepal it is clear that Nepal consists of stripes running from east to west across the country. The differences in altitude are the origin of the three different physical zones that Nepal possesses: the Himalaya-, the Middle Hills- and the Terai region.

The Himalayan region covers approximately 25 percent of the countries surface. Surfaces higher than 3000 metres are counted as the Himalayan region. About ten percent of the population lives in this



Map 3.2., Altitudes of Nepal (NGDC, 2011)

high area. Cultivation is possible up to about 4.200 metres, but it is impossible to live only from the crops that can be scraped out of high altitude fields. (Burbank, 1992: 12-14) The Middle Hills region has an altitude from 600 metres until 3000 metres. This region covers about 50 percent of the total surface of Nepal (Shrestha, N.D.: 3-5). The Pokhara- and Kathmandu Valley are also part of this region. The lowest physical zone in Nepal is the Terai region. The altitude of this region is below 600 metres. Before the 1950s the Terai region was full of dense jungles full of tigers, rhinoceroses, elephants, cobras and other poisonous snakes and scorpions (Burbank, 1992: 15-18). The Terai region is nowadays mostly a bare plain, and the centre of the agricultural economy with its fertile soil.

3.3. Political History

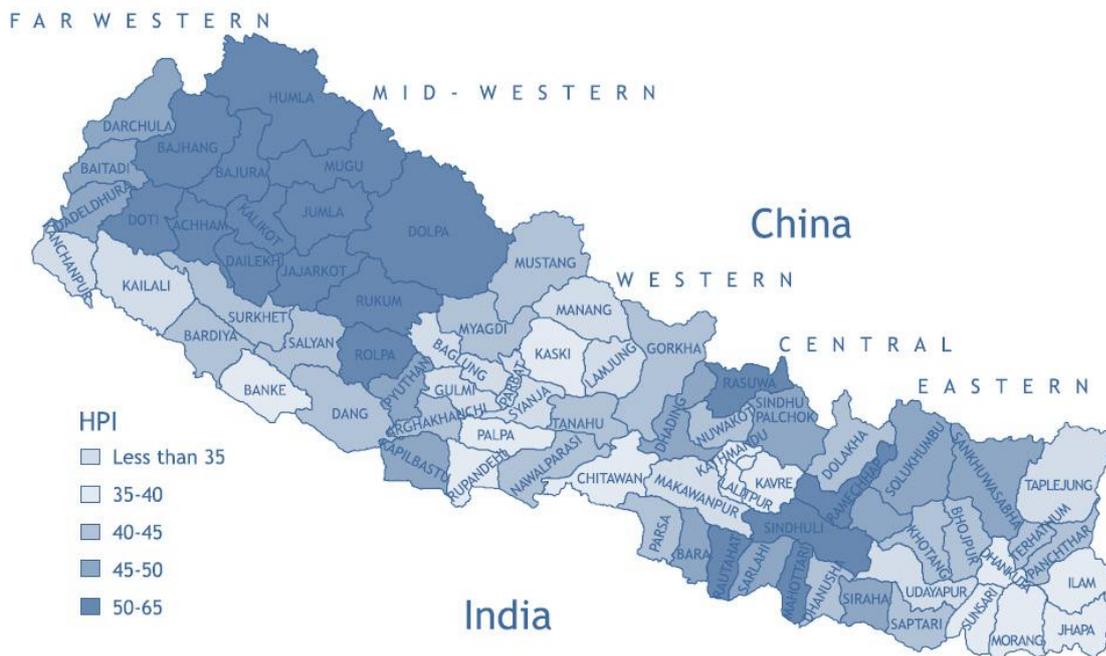
Nepal has a rich prehistory that consists mainly of legends born in the Kathmandu Valley. These legends are both told in Buddhists and Hindu versions and are still celebrated in traditions. (EB.com, 2011) A more reliable history can only be given from the middle ages onwards. In the fourteenth century under the Malla dynasty, Nepal was administrated under four different states: Banepa, Bhaktapur, Kathmandu and Patan. (Whelpton, 2005: 22) The modern Nepal origins from 1743 when Prithvi Narayan Shah of Gorkha incorporates the Kathmandu valley into the Gorkha dynasty. (Whelpton, 2005: 35)

Nowadays is Nepal a federal democratic republic (CIA Worldfactbook, 2011) but the political situation in Nepal is not quite stable with a civil war in their short term history. Before 1990 Nepal was a monarchy, with the absolute power of king Birendra. At that time Nepal did not get much attention from the media in the English speaking world. This all changed with the 'People's Movement' for democracy that started in February 1990. King Birendra became frightened by the protests and agreed to political reforms, so Nepal became a parliamentary monarchy. But still the political situation remained unstable. At the first elections in 1991 the Nepali Congress Party gathered the most votes, merely the parliament was already dismissed in 1994. Then the more unstable years began with coalitions between fighting parties. In February 1996 the civil war, 'People's War', launched by the Communist Party of Nepal, also known as the Maoists, began. (Whelpton, 2005: 1)

The next shock in the young political history of Nepal is the royal massacre in 2001. Crown prince Dipendra killed most members of the royal family for an unknown reason, and killed himself after. His uncle, Gyanendra, became the next king, while later, he also became a suspect of the massacre. (Whelpton, 2005: 211-215) In 2005 king Gyanendra dismissed the prime-minister and became an authoritarian monarch. In November 2006 after several months of peace negotiations the peace accord was signed between the Maoists and the government officials, and king Gyanendra had to give up his absolute reign. End 2007 the parliament voted for the abolishment of the monarchy which became reality in may 2008 when Nepal became a federal democratic republic. Nowadays the parliament is a coalition of the Nepali Congress party, the Communist Party of Nepal-United Marxist-Leninist and several smaller parties. Since February 2011 is Jhala Nath Khanal the prime minister of Nepal, his task was to conclude the drafting of the new constitution which was planned for the end of may 2011, but he extended this again with an extra three months. (CIA Worldfactbook, 2011; OHCHR, 2011) Jhala Nath Khanal has resigned on August 14 and Nepal has no prime minister again (Guardian, 2011).

3.4. Economic Situation

The living standards in Nepal have made progress in the last 50 years, and they merely have been rising since 1990. Still the level of human development is among the lowest of the world. (UNDP, 2004: 1) With a HDI of 0.428 Nepal ranks 138th out of 178 countries measured. (UNDP, 2011) According to the Human Poverty Index (HPI) reported in the global Human Development Report of 2004 (UNDP, 2004: 147-149) Nepal was one of the most poor countries in Southern Asia, only Bangladesh and Pakistan were more poor. Within Nepal there are also huge differences. The rural areas are much more poor than the urban areas, mountainous areas are more poor, followed by the Terai and last the Middle Hills.



Map 3.3., HPI per district (UNDP, 2004)

As shown in Map 3.3. it is clear that the mountainous districts in the mid- and far western development region are the most poor districts of Nepal. Those district are also the most remote districts of Nepal, they lay on the longest distance from Kathmandu, have poor infrastructure and are mountainous.

People in Nepal mostly live from agriculture. Still 75 percent of the people is working in the agricultural sector while only 33 percent of the GDP is extracted from this sector (CIA Worldfactbook, 2011). Most of the people working in agriculture, are subsistent farmers and they do not sell much on markets. Despite of all those people working in agriculture there is still a food insecurity in Nepal. Half of the children under five years old are stunted or chronically undernourished. In many communities in Nepal the acute malnutrition rates exceed 15 percent. (WFP, 2011)

3.5. Caste System

The caste system of Nepal is officially abolished in 1963 but is still preformed by most of the Hindu population of Nepal. Around 80 percent of the Nepalese population is Hindu (CBS, 2001), which implies that the caste system still has a large influence on the Nepali society.

In a caste system, the birth fundamentally determines the shape of people’s lives in different crucial aspects. Caste groups are linked to occupation, people do not marry outside their caste group, and people mostly do only mate with people within their own caste group (Macionis & Plummer, 2005: 195). The Nepali caste system has dozens of gradations. Broadly speaking the caste system has a division into four castes, which have different names in different literature. The four castes that could be distinguished are: Brahmin, Chhetri, Baishya and Sudra. The Brahmins are in the top of the caste system, traditionally they are the priests. The second caste in the system are the Chhetris. They have much in common with the Brahmin caste, traditionally people from this caste were warriors. Nowadays many of the soldiers are still Chhetri. (Burbank, 1992: 30-40) The Baishya and Sudra castes are on the lowest step of the social and economic ladder in Nepal. But these are the largest groups of the Nepali society. There are still huge difference between the castes and their social and economic status. People from the higher castes are mostly higher on the social and economic ladder than people from the lower castes. This is also stated by the UNDP (2004) *‘Nepal is hardly alone among the numerous countries worldwide that have allowed both historical and contemporary factors to perpetuate the gaps between its haves and have-nots.’* Although the caste system has been abolished, and considering the fact that since the constitution of 1990 every ethnic group in Nepal has the same rights, the effects of the caste system are still visible in the Nepali society. In offices and in governmental jobs there is still an overrepresentation of people from the higher castes. And under the poor people in Nepal there is still an overrepresentation of people from the lower castes.

3.6. Sanitation Sector in Nepal

The status of basic sanitation coverage in Nepal is low, only 43 percent of the population had access to a basic sanitation facility in 2009, as shown in figure 3.1. . This is an overall percentage, some districts have a sanitation coverage of less than 11 percent (GoN, 2010: II-IV). In 1972 the sanitation sector in Nepal was founded with the establishment of the Department of Water Supply and Sewerage (DWSS). The real development within the sanitation sector in Nepal started in

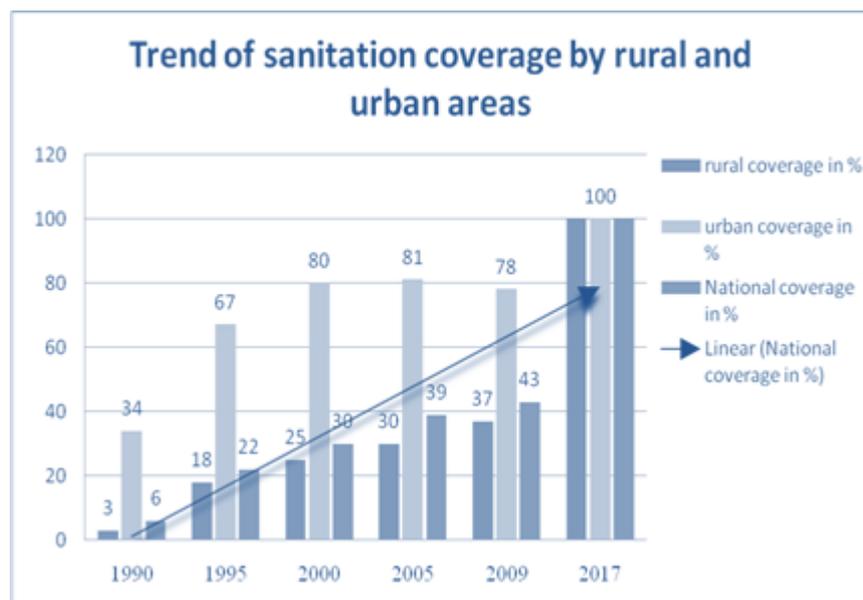


Figure 3.1., Trend of sanitation coverage (GoN, 2010)

the 1990s, with the rise of sanitation partners. In the end of the 1990s the Steering Committee for National Sanitation Action (SCNSA) was established as a partnership organisation in sanitation policies. (GoN, 2010: 1-2)

The SCNSA still exists, and consists of all national stakeholders working on sanitation. The major stakeholders are, next to several governmental departments, UNICEF, WHO, UN-Habitat and NEWAH. The complete list of stakeholders who are part of the SCNSA can be found in Appendix 2. To create more unity within the sanitation sector in Nepal the SCNSA wrote the Sanitation and Hygiene Master plan. The master plan has to help the stakeholders in effective planning, budgeting, human resource mobilization, implementation, monitoring and evaluation and follow up of hygiene and sanitation programmes. (GoN, 2010: ii) The master plan is written as a final act to reach the MDG on sanitation and to achieve the national target of total sanitation coverage in 2017.

3.6.1. Sanitation and Hygiene Master plan

To create the Sanitation and Hygiene Master plan the SCNSA mobilised a team of experts and an officer from DWSS as a liaison officer. The team reviewed national and international hygiene and sanitation policies, master plans, and other sanitation related documents. While developing the master plan, more experts within the SCNSA were consulted to create a master plan with wide support. Besides the national stakeholders, local stakeholders were consulted in visits and workshops. After modifying the concept master plan, the final master plan was developed and sent to the parliament for regulatory approval. (GoN, 2010: 11-12)

The Sanitation and Hygiene Master plan focuses on mainly three key points. First, is the focus on the achievement of Open Defecation Free (ODF) zones and universal access to toilets, this should happen through a total sanitation approach. Next to the increase of toilet coverage, the programs should encourage hygiene behaviours, with total behavioural change seen as the end product. The second key point implies that toilet coverage and waste management are the key components for hygiene and sanitation in urban and semi-urban settings. Finally and most important is the third key point of the master plan. The master plan recognizes the leadership of local governments in sanitation programmes and helps formulating strategies for programming in central government, donor, NGOs and local governments. (GoN, 2010: 11)

Most important of the master plan are the guiding principles, these principles have to be followed while planning and implementing hygiene and sanitation programmes. The nine guiding principles of the master plan are (GoN, 2010: 13-15):

- Reaching ODF is the first criteria of hygiene and sanitation programmes and post ODF activities are required to achieve sustainable environment.
- Within rehabilitation or reconstruction water supply and sanitation programmes at least 20 percent of the budget should go to promotion of hygiene and sanitation to ensure universal access to sanitation.
- Different choices in sanitation facilities have to be offered, to ensure people the choice of a low cost, hygienic, users friendly or sustainable facility.
- The leadership of the hygiene and sanitation programmes should be with the local bodies.
- The smallest implementation area of a hygiene and sanitation programme shall be a VDC or municipality.
- To ensure the access of poor and disadvantaged groups to sanitation facilities financial support mechanism will be managed on the local level.

- Within the programme area all public institutions should have a hygienic toilet and the public schools should have Child-, Gender-, and Differently abled (CGD) sanitation facilities.
- In urban, semi-urban and district headquarters all new build commercial buildings and public places should have toilets and septic tanks.
- Within the programmes on hygiene and sanitation, hand washing with soap should be promoted to stimulate hand washing and other hygienic behaviours.

New sanitation and hygiene programmes should follow these guidelines. It is not obliged to follow a specific approach. All (software) approaches are allowed when the use of the guiding principles is insured.

3.7. Regional context

Nepal is a country of diversity. Diversity in geography, culture, development and also diversity in sanitation coverage. A statement about one region of Nepal is not applicable on other regions in Nepal. The national context is therefore not comprehensive for the two research areas. In the following two paragraphs the regional context of the Bardiya- and Bajura district are discussed. The paragraphs consist of geographical and cultural information and continues with information about the regional sanitation status.

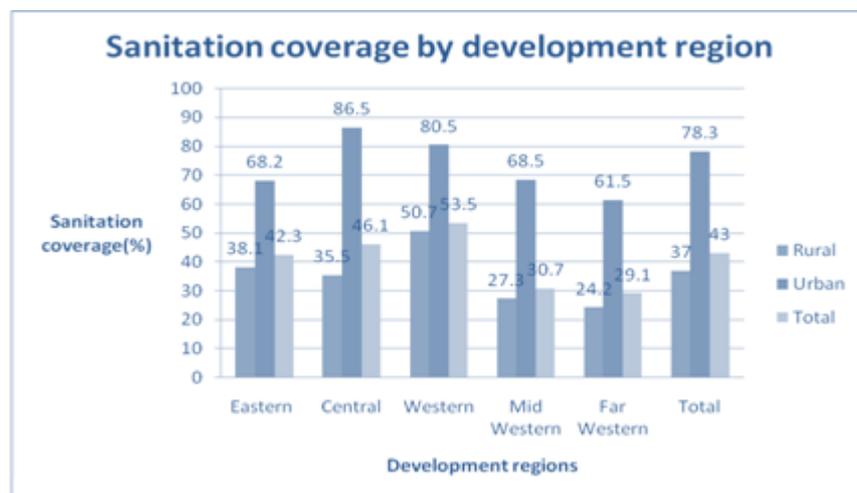


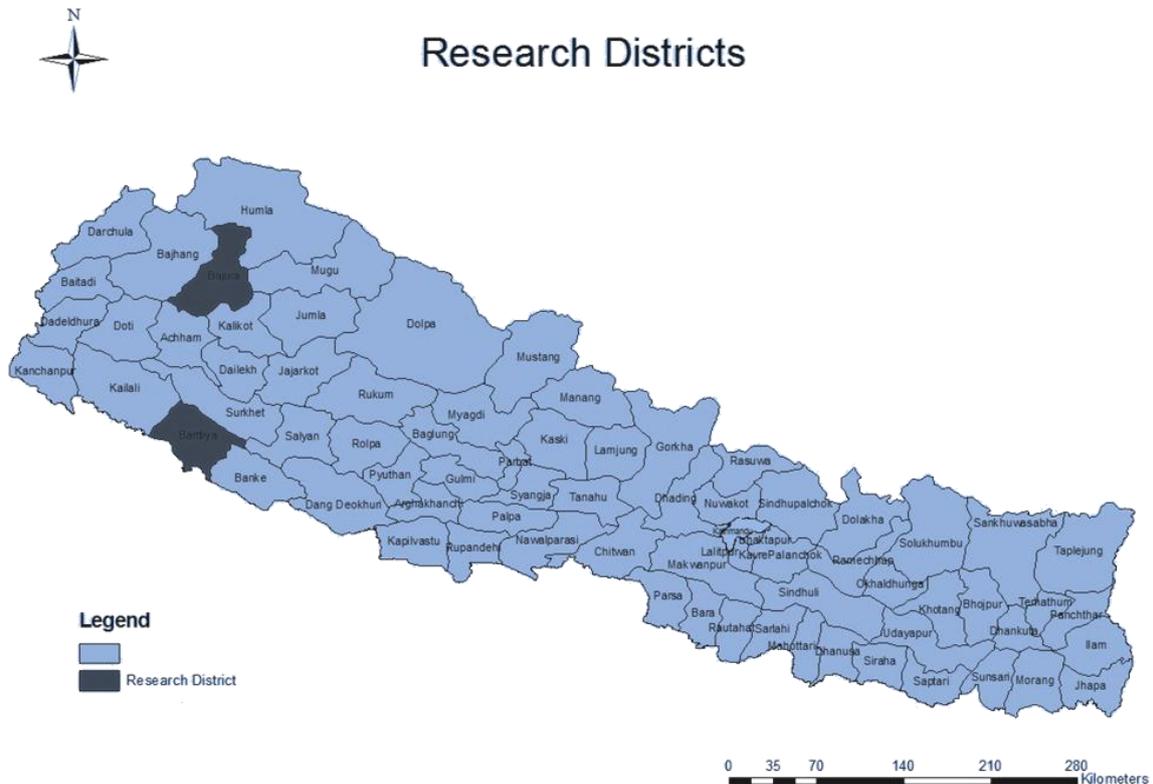
Figure 3.2., Sanitation coverage (%) per development region (GoN, 2010)

3.7.1. Bardiya District

The Bardiya district is located in the south-west of Nepal, it is part of the Mid-Western Development Region and the administrative Bheri zone, the location is highlighted in Map 3.4. . The district borders to Uttar Pradesh in India, and is located in the Terai Region. The district covers 2,025 square kilometres, and had 382,649 inhabitants in 2001. (Statoids.com, 2005) The district is especially a fertile plain, covered with agricultural land and forests. In the north of the district the Royal Bardiya National Park, the largest national park in the Terai (DNPWC, 2011), is located. The district has a tropical climate where temperatures can rise up to 42 degrees Celsius during the summer. The cultural statistics of the national statistics bureau say that about 95 percent of the population in the Bardiya district is Hindu, and almost 3 percent is Muslim (CBS, 2001).

According the Sanitation and Hygiene Master plan (GoN, 2010: III), the sanitation coverage within the Bardiya district was approximately 39 percent. Which is lower than the mean sanitation coverage of 43 percent of Nepal, but higher than the mean sanitation coverage of 30.7 percent of the Mid-Western Development Region as shown above in graph 3.2. .

Data gathered by the District Water Supply Office (DWSO) shows that between the Village Development Committee's (VDCs) in the district are major differences in sanitation coverage. The VDC with the highest sanitation coverage is Badalpur with a sanitation coverage of 66,88 percent, while the lowest coverage rate is measured in Patabhar VDC with only 14,6 percent sanitation coverage. (DWSO, 2011)



Map 3.4., Research districts

3.7.2. Bajura District

As shown in map 3.4., is the Bajura district located in the north-west of Nepal. It is the most eastern district of the Far-Western Development Region, and it is part of the Seti zone. The district is located in the Middle-Hills- and Himalaya region. In the census of 2001 (CBS, 2001) the Bajura district had 108,781 inhabitants and the district covers 2,188 square kilometres. (Statoids.com, 2005) Bajura is one of the most remote and poor districts of Nepal (Map 3.3.), there aren't many roads and the roads who are present appear to only seasonal roads.

While in most of the district in the Middle- Hills- and Himalaya region a lot of Buddhists are living, it has been measured in the census of 2001, that almost the whole population of Bajura, 98.7 percent, considers themselves Hindu (CBS, 2001).

According to the master plan (GoN, 2010: IV) the sanitation coverage in Bajura was the lowest of the whole country in 2009, even less than 11 percent of the population had access to basic sanitation facilities. This percentage is more an estimation than an actual fact. The officers in the District Development Committee (DDC) admitted that they have no actual data about the sanitation coverage and that they do not know how this percentage was measured.

3.8. Conclusion

Nepal is a country with many differences. The sanitation coverage in Nepal also differs much over the country. Possible explanations for this can be found in historical, cultural and geographical facts. Districts which are more remote and mountainous, are economically less developed, and have a relative low coverage in sanitation facilities. Due to the different cultures and physical conditions of the surroundings present in every district, the general policies are not applicable and effective in different districts.

To create unity within the sanitation sector in Nepal and to make the sanitation sector more effective a master plan is written. The Hygiene and Sanitation Master plan consists of several guidelines, which are the guiding principles of new policies and programmes in hygiene and sanitation. The most important guiding principle is that the policies and programmes should be managed on a local scale. The idea is that this will make the programmes more appropriate for the programme area and that the programmes will be more effective and efficient.

The two research areas in this research, Bardiya and Bajura are also two completely different regions which both have need of a sanitation programme tuned down on their needs and characteristics.

4. Methodology

4.1. Introduction

Within this chapter the used methodologies for this research will be explained. First the research objectives will be explained more comprehensively, followed by the research design. After the discussion about the research design there will be an operationalisation of all variables used in the livelihood assessment. At the end of the chapter the methodological limitations of the research will be presented.

4.2. Research objectives

The research has taken place during an internship period of fifteen weeks at the UN-Habitat Nepal GSF programme team. The internship was a mandatory component of the Master's educational program of International Development Studies at Utrecht University. Main goal of the internship was to conduct a successful research which was useful for both the host organisation, as for the final part of the educational program, the writing of a Masters thesis. The output of the internship and the research was therefore twofold, an interim report for the host organisation with the preliminary results and a Master's thesis with more detailed analyses to graduate from Utrecht University.

This study researches an often neglected part when implementing a sanitation programme. All contemporary approaches in sanitation policies state that the implementation should be adjusted to the needs and demands of the target population. To fulfil this promise, requests are made for economic- and sanitation statuses. Rarely a complete study is done on the cultural aspects which can influence the implementation of the sanitation programme, either negatively or positively. When a sanitation programme is adjusted to the cultural values and approaches of the target group it can be implemented more effective and efficient. The problem statement of this study will therefore be:

What are the main points of attention with the implementation of a sanitation programme regarding cultural values and approaches towards sanitation in the Bardiya and Bajura district?

The major research objective is the problem statement as stated above. To have enough information, to give a well structured answer to this statement other subjects have to be examined. The sanitation programme that will be implemented in the coming period in the Bardiya and Bajura district, is the Global Sanitation Fund programme. To find the challenges related to implementation of the sanitation programme, the examination of the sanitation programme is part of the study. The other part of the study, is the study on the cultural values and approaches in Bardiya and Bajura. These two parts have to be compared to discover the challenges that are occurring when the sanitation programme will be implemented.

4.3. Research Design

This study has a mixed methods research design. Both qualitative as quantitative research methods are used to create a complete image on the cultural challenges on the implementation of a sanitation programme. The qualitative and quantitative research methods are employed in order that different aspects of the research is covered. This approach of mixed methods research is called 'complementarity mixed methods research' (Hammersley, 1996).

4.3.1. Research Locations

The research has taken place on different locations.

The (inter)national stakeholders in sanitation are interviewed in the Kathmandu valley. The stakeholders who are located in the Kathmandu valley have been visited in their own offices. Mister Oliver Jones, an international stakeholder, is interviewed while he was visiting the UN-Habitat office in Lalitpur.

District stakeholders are interviewed in the municipalities of the Bardiya and Bajura district, respectively Gulariya and Martadi. The stakeholders were located in the municipalities and visited in their offices.

Local stakeholders are interviewed at their office location. VDC offices, Sub-Health Posts (SHPs), Hospitals and Schools were visited and key persons in the office were interviewed.

The approached households in Bardiya are from four different VDCs: Dhodhari, Sanoshree, Mohamedpur and Mainapokhar. The surveys are taken at the homes of people or at their place of work.

In Bajura the households were also coming from four different VDCs: Dahakot, Kolti, Martadi and Gotree. The surveys in Kolti and Martadi VDC are also taken at people's home or place of work. The people from Dahakot and Gotree VDC are interviewed in Martadi on strategic locations where they entered the city.

4.3.2. Sample Design

The stakeholders who are interviewed in the Kathmandu valley are introduced by Mr. Adhikari from UN-Habitat. He gave a list with people who could be contacted for an interview and who had much experience in the national sanitation sector. The official name of this sampling frame is convenience sampling (Bryman, 2008: 458), while in reality there was no such thing as sampling. Employees of the most important organisations and government departments in the Nepalese sanitation sector were interviewed. Mister Oliver Jones, the programme officer of the GSF programme of WSSCC visited UN-Habitat and was also interviewed. The interviewed stakeholders are listed in appendix 3.

Within the districts there were interviews with as many officers which had a stake in the district sanitation sector. As many offices were visited and key persons in the offices were interviewed. A list of all offices which are visited for an interview in the district are listed in appendix 3. The list is not exhaustive, not all district stakeholders on sanitation are interviewed. This was due to the fact that multiple officers were out of office when conducting the research in the district.

The GSF programme will focus on the whole Bardiya and Bajura district. It was not possible to conduct a research in all VDCs of the district. In every district four VDCs are chosen which can represent the district. The four VDCs in the districts are chosen by the research assistants who both have lived almost their whole live in the region, and who had the knowledge to choose representative VDCs for the districts. The VDCs are chosen to be representative for the cultural backgrounds and livelihoods of people living in the Bardiya and Bajura district. In Bardiya the selection of the VDCs was also based on the known sanitation coverage. The mean sanitation coverage of the four chosen VDCs in Bardiya was almost the same as the whole district. The four VDCs in Bardiya are: Dhodhari, Sanoshree, Mohamedpur and Mainapokhar. The four VDCs in Bajura are: Dahakot, Martadi, Kolti and Gotree.

To gather a more comprehensive image on the lives of people within the district, and on the sanitation and health status of the district, local stakeholders were interviewed. Local offices are visited and key persons in the office are interviewed. The offices which were visited were health institutions, VDC offices and schools. Within the schools conversations are held with students, teachers and sanitation facilities visited. A list of the visited offices can be found in appendix 3.

The households which are interviewed in the Bardiya district are approached in the four selected VDCs. There was no information available on the inhabitants of the VDCs and in which villages the most people lived. So different villages within the VDCs were approached and within these villages the households were randomly selected. In total there have been 50 interviews with households in the Bardiya district, the division of interviews within the VDCs can be found in appendix 3. There were more interviews in Dhodhari VDC, comparing to the other VDCs. This was due to the fact that within the Dhodhari VDC a big Tharu community is living. Which is the biggest ethnical group in the Bardiya district. Before conducting the surveys, the division was already made under the VDCs. Within the VDCs a quota sampling was therefore used (Bryman, 2008: 185).

In the Bajura district also 50 households were interviewed. These households are also selected out of the four VDCs. Within Kolti and Martadi VDC the same sampling approach was used as in the Bardiya district. Different villages within the VDC were visited and households were randomly approached. Visits to the other two VDCs were not possible because of time and travel limitations. Therefore another sampling strategy is chosen to reach the households in the other two VDCs. Martadi is the biggest village in the district and regularly people from the whole district visit Martadi for market and administrative purposes. To stand on strategic places where people entered and left the village people were asked where they were from. People from Dahakot and Gotree VDC were asked to contribute with the research. The division per VDC was also made before conducting the surveys so a quota sampling strategy was used (Bryman, 2008: 185). Appendix X gives information about the division of the interviews on the four different VDCs. Within Martadi VDC more households are interviewed, because most people live in the Martadi VDC, other VDCs are more inhospitable and therefore less suitable for living.

4.3.3. Qualitative Research Methods

The interviews with the (inter)national stakeholders in the Kathmandu valley, the district stakeholders and local stakeholders are part of the qualitative research methods. Besides these interviews my personal experience and observations are also part of the research. During the research I lived several weeks in the research areas. During the stay I was able to observe people's lives and had multiple conversations with local people.

The interviews with the (inter)national stakeholders in sanitation are held under guidance of a topic list. The interviewees led the direction of the interview, although all subjects of the topic list were covered by asking some directing questions. All interviews were taped and transcribed afterwards, in that way it was possible to have comfortable conversations with the interviewees.

The district stakeholders and key persons at the VDC offices, SHPs and hospital were also interviewed with help of a topic list. These persons were interviewed with help of research assistants who spoke the local language. Notes were made of the interviews and processed afterwards with the guidance of the research assistants who held the interviews.

The schools which were visited were approached in an open way. Conversations about sanitation and hygiene education and the sanitation facilities were held with teachers, the management and

with the students from different ages. The translations in these conversations were made by research assistants. Some conversations were in English. Observations were made of the sanitation facilities and practices.

4.3.4. Quantitative Research Methods

The households were interviewed with help of a questionnaire. The questionnaire is a mix of a household identification scheme, closed and open questions. The questionnaire can be found in appendix 4. The households were interviewed by the research assistants. Before conducting the questionnaires the assistants were trained, all questions were explained and the research objectives were told, in that way they could get the right and most useful information. There were also some test interviews to train the assistants better to be alert to difficulties and hidden information. At the moment of the interviews my research colleague or myself were always present.

Within the questionnaire the households were asked questions about the composition of their household, their livelihood and their values and approaches towards sanitation use.

The answers on the surveys were imported into SPSS in order to analyse the results. The methods of recoding the answers into measurable variables, which indicate the livelihood assets, are written down in appendix 1.

4.4. Methodological Limitations of the Research

When conducting this research some things occurred and decisions are made which can limit the research. Some of these limitations are part of the methodology. These limitations are listed below.

- The (inter)national stakeholders who are interviewed are nominated and introduced by a member of the UN-Habitat GSF programme team. The interviewees knew all a lot about the Nepalese sanitation sector and also about the GSF programme. Because they knew we were interns at UN-Habitat it is possible that these people did not give their most honest opinions about the programme and the master plan. It is possible that the interviewees did not see us as independent researchers and gave selective information to protect themselves for future cooperation.
- Within the two districts it was sometimes hard to gather information. People were not in their office for an unknown period and the information we asked was behind a lock that others could not open. Absence of key persons in the research area was therefore a part of the limitations this research got.
- The key persons in the districts mostly did not speak enough English for an interview. The interviews were therefore done with the translations of a research assistant, answers were noted down. On this way it is possible that detailed information got lost, it can not be checked how much and which information is lost because of language barriers.
- The researched VDCs in the districts are chosen by research assistants. It are people who have knowledge about the region and who knew more about people living in the VDCs. Their knowledge has to be trusted, because there is no statistical information available to check if they had made the right choices in choosing the research VDCs.
- The research assistant in the Bardiya district did not want to ask people some questions which were very important. An example was a question about sanitation use of women during their menses. He found it inappropriate to ask people to their values about women's

menstruation and toilet use, and stated it was not a problem in the area. He did not change his mind and valuable information could not be discovered.

- Most of the respondents were male. We asked to have an interview with the head of the households, which mostly meant that we spoke to males. This could give a gender bias on the answers given.
- In Bajura the official toilet coverage is 11 percent. From the interviewed households 48 percent had an own sanitation facility. This difference can give a bias on the results, mainly on the values and approaches towards sanitation.
- There was no information available on the inhabitants of the VDCs, not even maps on the places of settlements. The use of sampling frame was therefore not possible. The settlements and respondents are randomly chosen on the spot, it is possible that this created a shifted image.
- To make it more easy to analyse some variables, the answers given are recoded. Every recode has the result that a part of information is lost. Losing detailed information is unfortunate but sometimes necessary to analyse the data.

5. The Global Sanitation Fund Programme

5.1. Introduction

This chapter focuses on the first sub-question which will help in answering the problem statement. The first sub-question is: '*What is the content of the Global Sanitation Fund programme for the Bajura and Bardiya district?*'. The chapter is divided into different paragraphs. First the Global Sanitation Fund programme will be discussed on a global and national scale. Further on the planned interventions will be discussed for both research districts. In the last paragraph there will be a conclusion that gives answer to the sub-question.

5.2. The GSF Programme on Global Scale

The Global Sanitation Fund is a programme of the Water Supply and Sanitation Collaborative Council (WSSCC). The programme is launched in 2008 and promotes sustainable, long-term sanitation and hygiene. The GSF offers an efficient and cost-effective opportunity for contributors to help the world's most poor people to access sanitation and hygiene. (WSSCC, 2010)

The GSF has a global scope, solely it works in carefully selected countries. The selection of funding countries takes place through different selection criteria. These criteria are the following:

- A large proportion of the population has no access to basic sanitation
- There is a high incidence of diseases related to poor water, sanitation and hygiene
- The economic and social development indicators of a country are low
- There is a national sanitation policy which is not funded enough
- Presence of a national WASH organisation or other WSSCC partners which request the GSF
- Legal support of the government towards the GSF programme (WSSCC, 2011)

The first countries that are approved for the GSF programme are: Burkina Faso, India, Madagascar, Nepal, Pakistan, Senegal and Uganda. In the meantime a second list of countries is released with countries that prepare the GSF programme: Bangladesh, Benin, Cambodia, Ethiopia, Kenya, Malawi, Mali, Nigeria, Tanzania and Togo.

Within all countries the GSF programme is planned the same way. This is shown in figure 5.1. .

At the global level, the GSF programme is managed by the WSSCC Secretariat in Geneva. The secretariat gathers the funds and donations, selects the countries for funding, and manages the distribution of the funds. The WSSCC is an organisation which is legally hosted by the United Nations Office for Project Services (UNOPS), and therefore are the principles and scope of the GSF project governed by a member-elected steering committee. This committee approves the procedures, decides all working criteria, approves the selection of countries and allocation of the funds and reviews the overall progress of the GSF. On the right in the model the advisory committee is mentioned. This is an independent committee that gives advice on the operations of the GSF and ensures the quality of the programmes and work.

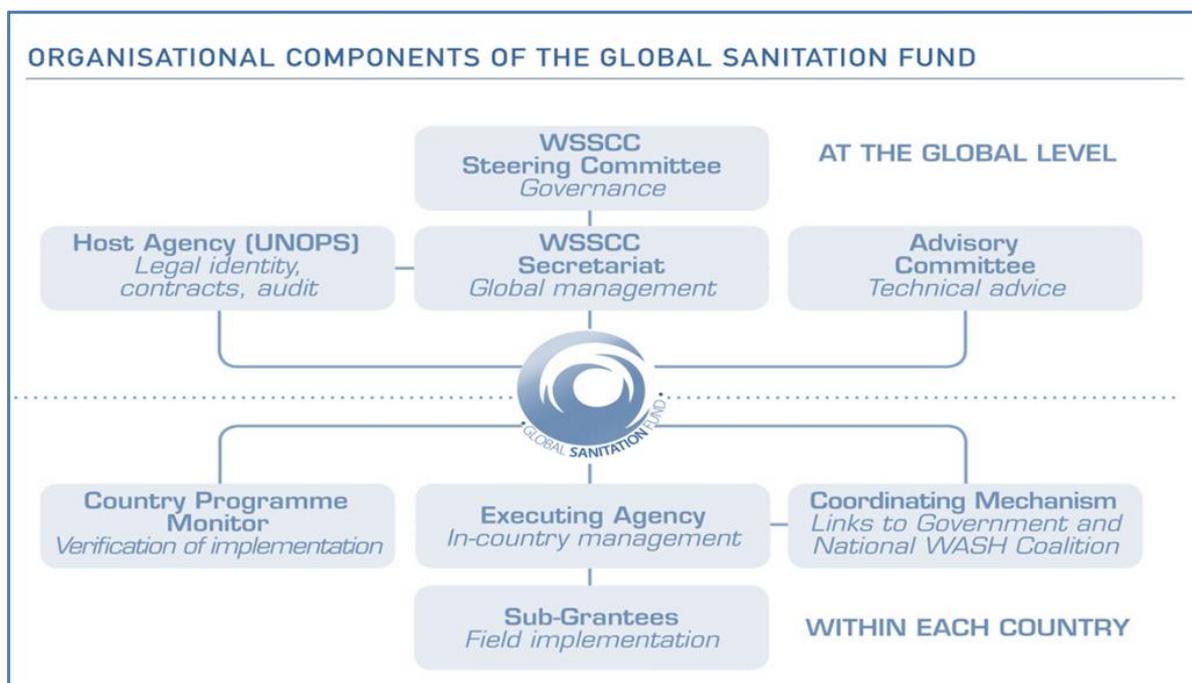


Figure 5. 1. , Planning model GSF Programme (WSSCC, 2011)

Within every country where the GSF programme is active the programme works with the same procedure. First an executing agency is being selected. Organisations enrol for an open and competitive procurement process. When selected they receive the grant and they manage the funded country programme. This executive agency selects, supervises and support the sub-grantees who directly implement the sanitation and hygiene programmes. The country programme monitor is independently appointed by the WSSCC and they verify and report the work of the executive agency to the WSSCC. The coordinating mechanism that is mentioned in the model is the representation of the national WASH sector, they make sure that the GSF is consistent with the national policies and activities.

This model is implemented on every country which is funded with the GSF programme. In this way the procedures followed in every country are the same but the organisations are different. In most cases the existing WSSCC national WASH coalition or other WSSCC partners request the GSF programme for a country. The WSSCC responds to this with discussions with the national government. The national governments has to approve with the GSF programme. In that way the national governments will be provided with the leadership and legitimacy to any work undertaken by the GSF programme. When the national governments have approved the GSF programme, the procedures start. The coordinating mechanism, executive agency and country programme monitor have to be sought. (WSSCC, 2010; WSSCC, 2011)

5.3. The GSF Programme in Nepal

In 2008 the Ministry of Physical Planning and Works (MPPW) wrote a welcome letter to the WSSCC for mobilizing the GSF programme in Nepal. The SCNSA had several meetings about the GSF related activities. The coordinating mechanism was formed out of employees of the National Planning Commission Secretariat, Department of Water Supply and Sewerage, Department of Health Services, Department of Education, Department of Local Infrastructure Development and Agricultural Roads, Rural Water Supply and Sanitation Fund Development Board, UNICEF, Nepal Red Cross Society,

WaterAid Nepal and Nepal Water for Health. This coordinating mechanism is called the National Coordinating Body. The SCNSA and the NCB formed the scope of work for the GSF Programme Nepal, and submitted this with WSSCC for approval. This was approved and in 2009 the processes of the GSF programme proceeded in Nepal with the coordination of the NCB. WSSCC selected the executive agency and the country programme monitor, through the competitive bidding process. UN-Habitat and CSC&CO are serving as respectively the executive agency and country programme monitor. (UN-Habitat, 2010) This leads to the GSF model of Nepal as shown in figure 5.2. .

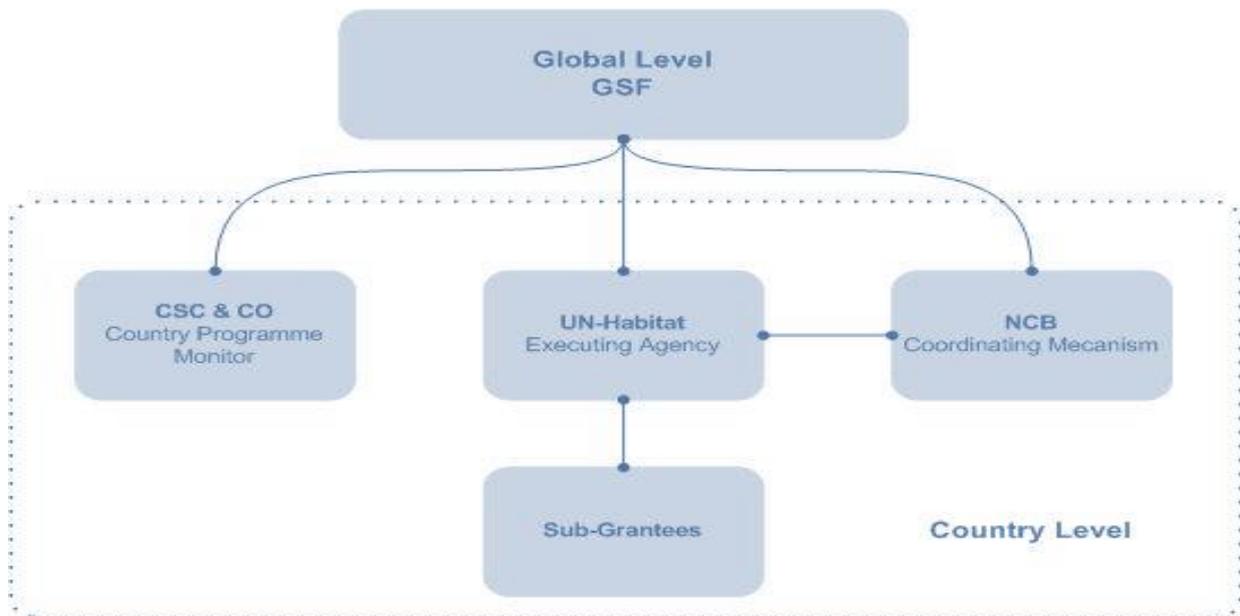


Figure 5. 2. Planning model GSF Programme Nepal (UN-Habitat, 2011)

The GSF programme has to be consistent to the national WASH policies, in Nepal the GSF programme supports the national efforts in total sanitation through following the national policy, the Sanitation and Hygiene Master plan. Therefore the GSF is solely directed to help achieve the national goal, total sanitation in 2017, and the target of the MDGs. While in the Sanitation and Hygiene Master plan nine guiding principles are leading, there are four core areas where the GSF has its focus on. These four areas of intervention are:

- Stimulating community action to achieve ODF
- Capacity development of stakeholders at all levels with due focus on triggering and sensitization
- Strengthening of national sanitation sector strategies with the implementation of a strategic plan at district, municipality and VDC level
- Knowledge management through collection and dissemination of best practices and lessons learnt (UN-Habitat, 2011)

According to the GSF programme manager of WSSCC, the most important aspect of the GSF in Nepal should be the combination of the demand and supply side within the sanitation sector. There are good working approaches on the demand creation of sanitation, and according to him there should be done more on the supply side, like social marketing.

The GSF project will be focussing on five districts. These districts are each from a development region and are located in different physical zones. The districts where the programme will be implemented are: Arghakhanchi, Bajura, Bardiya, Sindhupalchowk, and Sunsari. According to UN-Habitat (2010: 3) these districts are chosen according to the following five selecting criteria:

- Large numbers of people do not have access to basic sanitation
- Areas covering all the ecological and developmental regions of the country
- High incidence of diseases related to poor water, sanitation and hygiene
- Low economic and social development indicators
- District policies and strategy is in line with national policy and the policy does not have complete funding

The selection of districts is not done correctly, according to a sanitation consultant, who is a member of the NCB. He says: *'The GSF is quite good to select some less covered districts so implement the sanitation project. But the GSF also selected some districts that already have many projects and that do not have to make an enormous progress to achieve the goals (national goal and MDG target, red.). ... One of the districts chosen for the GSF is a district which already has 51 percent sanitation coverage ... so the GSF in this district is more a success programme.'* He means the Sunsari district, which had a sanitation coverage of 51.33 percent in 2009 (GoN, 2010). According to the sanitation consultant there had to be more emphasis on the first and third criteria than on the criteria that all development regions have to be covered.

The GSF will not be implemented in all five districts in the same period. The GSF programme planned a programme period of five years in Nepal. The programme will start in two districts and will be expanded with one district every year. The first two districts where the GSF will be implemented are the Bajura and Bardiya districts.

5.4. The GSF Programme Implemented

The actual implementation of the sanitation programme is done by the sub-grantees. These sub-grantees have to be contracted by UN-Habitat. The sub-grantees that are going to implement the programme, define the actual interpretation of the sanitation programme.

Sub-grantees are contracted by UN-Habitat after their project is being approved by UN-Habitat and the NCB.

According to the planning of the GSF project the contracts had to be signed by now and the projects will be starting on the moment that this study is written. Unfortunately there has been some delay in the process. The final chosen proposals of the applicants still have to be evaluated and approved by the NCB. This is a disappointment, the projects and therefore the final planned implementations are not known on the moment of this writing.

For me this is a big disappointment because it is unknown which projects and which approaches will be chosen for the implementation of the GSF programme. On the other hand, the document with all the criteria on which the sub-grantees will be chosen is available. In the document is written which kind of projects will be chosen and what the main goals of these projects will be. This document and information is therefore the base of this paragraph.

The GSF programme does not only support sanitation projects that are district specific, but they also support some wider programmes that can be used by the implementation of the programme in multiple districts. Examples of these projects are: capacity building, monitoring and evaluation, training of trainers, and the dissemination of the National Sanitation and Hygiene Master plan.

Besides these more general projects there will be some district specific sanitation projects. The first project that will be implemented in the districts, is a district wide ODF campaign, which includes a district wide school programme. There will also be a media advocacy and communication strategy campaign in the districts to support the sanitation projects.

Because of the delay in the selection and approval of the sub-grantees it is not known how these programmes will be implemented and what the strategies will be. It is known that the preference will go to CLTS and SLTS programmes, but the programmes and therefore approaches are not known on the moment. Further is known that it will certainly be in line with the National Sanitation and Hygiene Master plan written by the SCNSA, because the NCB will be supervising on this.

5.5. Conclusion

The GSF programme works in different countries generally on the same way. There is a global level where organisations take care of the global implementation of the GSF programme. Countries which apply for the programme are approved and guidance is given for the national GSF programmes. At the national level the GSF programme is arranged in the same way. The executing agency is the spindle in the national programme, they choose the sub-grantees and work on the actual implementation. The National Coordinating Body makes sure that the GSF programme follows the national policy on sanitation and the Country Programme Monitor controls and monitors the programme.

It is not known what the specific content of the GSF programme entails for the two districts. All that is known at the moment is that there will be ODF campaigns, school projects and that the media will be used. This will be done in a way that it is in line with the National Sanitation and Hygiene Master plan.

6. The livelihoods in Bajura and Bardiya

6.1. Introduction

With this chapter the study to the cultural values and approaches towards sanitation use in the two districts begins. The first part of the study towards cultural values and approaches is the identification of the livelihoods that are present in the two districts. The sub-question that is leading in this chapter is: *'Which different livelihoods can be distinguished in the Bajura and Bardiya district?'* The chapter is divided into two parts, first the Bajura district is discussed and second the Bardiya district. Per district the five different assets of the livelihoods, are being described and the differences between and within livelihoods between are being explored. The analyses are predominantly made on the basis of the questionnaires that are held with the households and the local observations. Interviews with district and local stakeholders in the region are also a source of information that is used in this chapter.

6.2. Key Figures



Map 6.1. Research districts

Table 6.1. Key figures of the Bajura and Bardiya district

	Bajura	Bardiya
Area	2,188 Km ²	2,025 Km ²
Population (2001)	100,626	382,649
Development Region	Far Western	Mid Western
Physical region	Middle Hills, Himalaya	Terai
Gender composition (2001)	49.50% Male, 50.50% Female	50.35% Male, 49.65% Female
Literacy rate (2001)	50.67% Male, 17.07% Female	55.05% Male, 35.64% Female

(CBS, 2001)

6.3. Bajura District

The Bajura district is located on the transition from the Middle-Hills region towards the Himalaya region as shown in the altitude map 3.2. . The district is what Nepali policy makers name a remote district. Bajura has a low score on different development indicators such as HDI and HPI and is therefore seen as one of the most poor and least developed district of Nepal.

6.3.1. Human Capital

Human capital can be explained as human abilities that dwell within the human itself (Eldis, 2011; De Haan, 2006). As shown in table 6.1. there is a difference between gender in the literacy rate. This indicates a difference between gender in educational levels, and probably in their values and approaches. Looking at the daily activity of the interviewed heads of the households it shows that 5 out of 50 interviewed head of the households was unemployed. Under the head of the households which were interviewed in the Bajura district were 15 females, the five unemployed heads of the households were all females. So 5 out of 15 interviewed females was unemployed, while all 35 interviewed males were employed. This also indicated a difference in gender roles in the region. When people have an occupation there is no difference between males and females. As shown in Figure 6.1, most people work in (subsistent) agriculture. Other occupations that are specific for this region are stone breaker and porter.

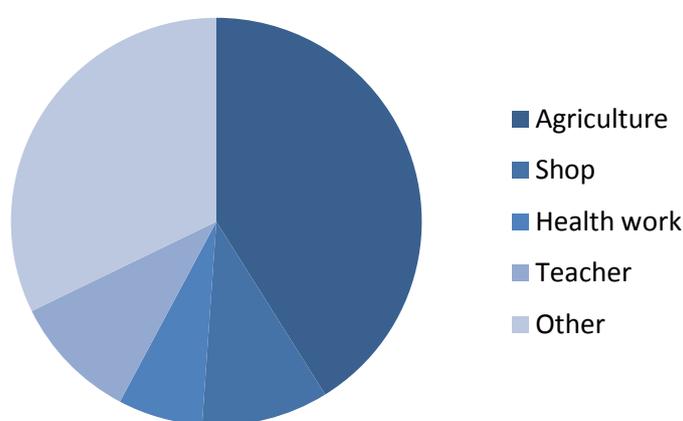


Figure 6.1. Division of occupations in the Bajura district

Education is also part of human capital. There is also a difference between the gender of the head of the household and their highest attained educational level. From the respondents there was a larger proportion of females who did not have any education in comparison with males. This is made more visible in table 6.2., most of the interviewed males had an education equal or higher as secondary school, while most of the interviewed females did not have any education. The five females who were unemployed are also part of the eight females who have no educational history.

Table 6.2., Division of highest attained educational levels heads of household on gender

	Male	Female	Total
None	10	8	18
Primary school	10	3	13
≥ Secondary school	15	4	19
<i>Total</i>	<i>35</i>	<i>15</i>	<i>50</i>

The highest attained educational level of the respondents was a Bachelor degree, seven respondents out of fifty had a bachelor degree. This were five males and two females. It is also interesting to look at the highest attained educational level in a household. Table 6.3. shows the frequency of the highest educational level in a household.

Table 6.3. Division of the highest attained educational level of the household

Educational level	Frequency
None	2
Primary	20
≥ Secondary school	28
<i>Total</i>	<i>50</i>

It is visible that in most of the households there is a member who has an educational level which is equal to secondary school or higher. There is a difference between the educational level of the head of the households and the highest attained educational level of the households. Children are now more able to go to school than their parents in the past. There are no actual differences between the gender of the children and their educational level. It seems that the gender roles are more generation specific, and that the children nowadays do not feel those gender roles as much as their parents.

Another part of human capital is the health of people. Nutrition is an important factor for health. To be healthy it is important to have enough nutritious food. The officer director of the District Development Committee (DDC) of Bajura mentioned the nutrition problems in the district. People in the district are only able to grow their won for three months a year. The other part of the year people are relying on the World Food Programme (WFP) or the government with their ‘work for food’ programme. People in the region seem to be able to have enough nutritious meals, 39 out of the 50 interviewed households is able to eat at least three meals a day. There is no respondent who said to be underfed, which is probably caused by the intensive programmes which secure the food supply in the area.

Having not enough nutritious meals causes health problems. A big health problem in Bajura is the amount of waterborne diseases people have. As shown in figure 6.2. a lot of people who are treated in the district hospital or a sub health post in the district are treated from waterborne diseases.

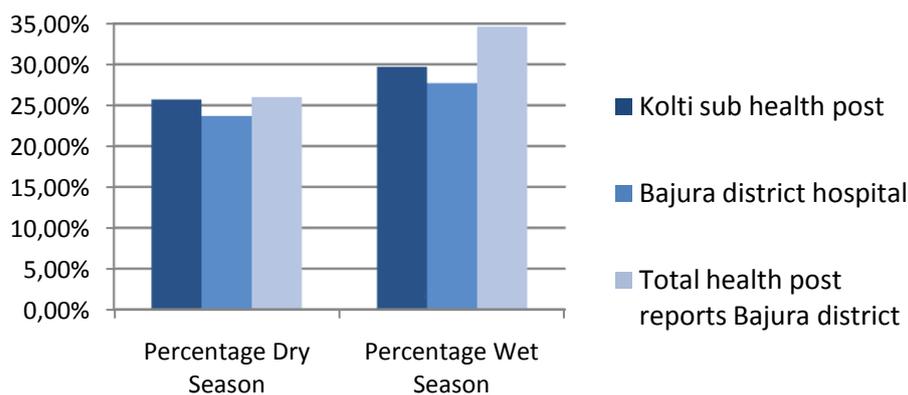


Figure 6.2. Percentages of waterborne diseases of all patients treated in 2010 (District Hospital Bajura, 2011)

Box 6.1. Waterborne diseases

- Anaemia
- Arsenicosis
- Ascariasis
- Campylobacteriosis
- Cholera
- Cyanobacterial Toxins
- Dengue and Dengue Haemorrhagic Fever
- Diarrhea
- Drowning
- Fluorosis
- Guinea-Worm Disease (Dracunculiasis)
- Hepatitis
- Japanese Encephalitis
- Lead Poisoning
- Leptospirosis
- Malaria
- Methaemoglobinemia
- Onchocerciasis (River Blindness)
- Ringworm (Tinea)
- Scabies
- Schistosomiasis
- Spinal Injury
- Trachoma
- Typhoid and Paratyphoid Enteric Fevers

(WHO, 2011)

The respondents also indicate to have problems with waterborne diseases. Most interviewed respondents had a history of waterborne diseases in their household and the amount of waterborne diseases within the households in the last year rises to 100 times. It is doubtful that a household of seven members can have hundred indices of waterborne diseases in a year, although it indicates the problem. From the fifty examined households, only six households did not have waterborne diseases in the past 12 months. Almost all households had at least one member which had a disease which can be indicated as a waterborne disease. Waterborne diseases are therefore an enormous problem in the Bajura district.

6.3.2. Physical Capital

According to Eldis (2011) and De Haan (2006) can physical capital be indicated as the store of human-made resources. Examples are infrastructure and produced goods.

Bajura is a remote district, the district is reachable with vehicles over a seasonal road, which stops four hours walking from the district capital, Martadi. There is an airport in Kolti, a village on an one day

walk from the district capital. Besides vehicles and an airplane the district is reachable with helicopters, the way of transport that is used by the WFP. Within most parts of the district transport with vehicles is not possible because of the absence of roads. Transport and travelling in the district is only possible by foot and with the use of horses, donkeys and goats. An example of the animal transport is shown with figure 6.3.. A nice illustration of the difficulties in travelling in the district is coming from an interview with the officer director of the DDC office of Bajura.



Figure 6.3. Animal transport in Bajura

'I am already six months stationed in the Bajura district, but still I did not visit other places than Martadi, it is simply not possible to travel around here.'

Mobile phones are common in the district, although there is no complete coverage. Most people have simcards of two different providers, because of the lack of difference in coverage in different areas. Internet connection is not very common in the district. In our observations there was only internet available in Martadi, and it was only available in a few places. There was one internet cafe with three computers which could be used for internet. The connections are also very unreliable.

Electricity is used in the district. On several places where we came there was use of electricity. When people are connected to power they receive 24 hours a day power, which is an exception in a country that has power schedules to reduce the load on power. From the fifty examined households 42 households use electricity, the eight households who did not use electricity were coming from all four research VDCs.

Having access to water is one thing, using safe water is something else. Although there is no water supply scheme and nobody has official water taps, people have a wide access to water. There are several rivers and streams coming from the high Himalaya mountains which people can easily access. Most people use the water from the streams directly and do not disinfect the water. Only twelve out of the fifty respondents indicated to use chemicals or to boil the water to disinfect it. The other 38 respondents did not use safe water. The most mentioned reason to use the water directly is because it looks safe to them. Other reasons mentioned were: 'Cold water is safe' and 'Running water is pure'. There were also respondents who knew that they used unsafe water, but did not have the knowledge to disinfect it.

According to the official records approximately 11 percent of the households in the Bajura district have their own sanitation facility (GoN, 2010). The people at the DDC office did not have statistical



Figure 6.4. Toilet building used as storage room

information about the sanitation coverage, and assumed that the official sanitation coverage rate of 11 percent was more a guess than a measured statistical number. Though the officers do not think that the sanitation coverage is higher than 11 percent in the district. The DDC office built 85 toilets in the village of Martadi in the last years, but in observations it is visible that many of the new toilet buildings are now used as a storage room for food and timber. The schools which were visited all had latrines. Some schools had different latrines for teachers, boys and girls. Although most of the toilets were very filthy. The use of toilets and hygiene was not educated on the visited schools, teachers and headmasters did not understand the need of educating children the need of using toilets and washing hands.

6.3.3. Social Capital

Social capital is formed by the social relationships of people (Eldis, 2011; De Haan, 2006). The contacts people have can be measured in quality and in quantity. One form of qualitative relationships are reciprocal relationships. Reciprocal relationships are characterised by the fact that people help each other without receiving any form of payment. These relationships are not common in the Bajura district. Only ten out of the fifty respondents indicated to have these reciprocal relationships. Most mentioned form of help was giving free food and medicines, or lending money without interest. Reciprocity can also be seen as being a member of a formal group or organisation. Only 11 respondents were an active member of a formal group or organisation. Remarkable is that all these groups and organisations are related to the development and human rights sector. Examples of the mentioned groups are: feminist dalit organisation, human rights committee, red cross, woman human rights and the World Food Programme.

Although the caste system is officially abolished it is still maintained by many Hindu's. People are born as part of a caste. The caste systems has restrictions, but within caste people feel related. Someone's caste is therefore also a part of people's social capital. From the fifty interviewed households five households did not feel committed to their own caste. In table 6.4. it is shown which castes the interviewed households are from. From the five households who did not feel any commitment anymore for their own caste three were coming from the lowest cast in the hierarchy, the Sudra caste. These respondents indicated that they feel more restrictions from the caste system when comparing to the beneficiaries within their caste. Most of the people still feel committed to their caste.

Table 6.4. Division of castes in the household research

Caste	Frequency	Frequency 'not committed to caste/group'
Brahmin	10	1
Chhetri	22	1
Sudra	15	3
No caste	3	0
<i>Total</i>	<i>50</i>	<i>5</i>

The quantity of the social relationships of a household is measured as the amount of contacts members of the household have outside their own village. This is visualised in figure 6.5. Most of the households do not have regular contact outside their own village. When people have contacts outside their village they have it weekly or daily. The people who have weekly and daily contact outside their village are coming from all four research VDCs. Most of these households have contacts outside their village for business purposes, or because relatives live somewhere else.



Figure 6.5. Amount of household contacts outside their own village

6.3.4. Natural Capital

Natural capital can be seen as the natural resources people are able to access (Eldis, 2011; De Haan, 2006). The most used natural resource is off course water. Because of the lack of a water supply scheme people use the water directly from the rivers and streams coming from the mountains. Next to water there are two resources that almost everybody uses. These natural resources are timber and stone. People use the timber as firewood and to build furniture and houses. Stones are also used to build houses. The traditional houses in the Bajura district are build from local available

resources. Bajura is a rocky area and stones are widely available. Other mentioned resources are sand, mud and plants. Sand and mud are also used for building houses. The plants used from nature are used for religious purposes as offering.



Figure 6.6. Traditional houses of Bajura

Within the Bajura district there is not much land available for building and agriculture, because of the physical features of the region. The amount of land the examined households own, is shown in table 6.5. Most people do not have much land to grow food and the land is not nutritious because of the rocky soil. The lack of land is therefore a problem in the Bajura district.

Table 6.5., Amount of land owned by the household in the research

Amount of Biggha	Frequency
No land	4
0 to 0,10	24
0,15 to 0,50	18
More than 0,50	4
<i>Total</i>	<i>50</i>

(1 Biggha equals 1,67 acres)

6.3.5. Financial Capital

The asset of financial capital is measured by wages, assets, savings, remittances, debt, and expenditures. These variables are the financial resources that people can access (Eldis, 2011; De Haan, 2006).

According to map 3.3. from UNDP scores Bajura high on the ladder of human poverty. According to Nepali policy makers is Bajura one of the most poor districts of the country. Absolute numbers do not give information about the poverty in an area. In table 6.6. the relative incomes of the examined households are shown. The relative incomes are calculated with the help of the income out of labour, the received remittances and the expenses of the household, all indicators are per month.

Table 6.6., Division of the relative income of households in NRS per month

Relative incomes	Frequency
≤ -/-10 000	2
-/-9 999 to -/-5 000	3
-/- 4 999 to 0	10
0 to 5 000	17
5 001 to 10 000	8
≥ 10 000	10
<i>Total</i>	<i>50</i>

Fifteen out of the fifty examined households have more expenses than incomes. And have a negative relative income. The educational level of the head of the households has a relation with the relative income. In the cross table under this text it is shown that in the group of households where the head of the household has no education, a bigger proportion has a negative relative income than

in the group of households, where the head of the household has an education higher or equal to secondary school.

Table 6.7., Relation between the educational level head of households and the relative income

		Relative income		
		Negative	Positive	
Educational level head of the households	No	7	11	18
	Primary school	5	8	13
	≥ Secondary school	3	17	19
		15	35	50

There is no relation between the relative income and the occupation people have. Both (subsistent) farmers as well as accountants have a negative relative income. There is also no relation between the caste of the households and their relative income. It can be said that there are enormous differences in the incomes of people, some people have a positive balance at the end of the month while others are more than 10 000 NRS short on the end of the month.

Nine of the fifty households receives remittances. They have an extra source of income next to their own income out of labour. The nine households which receive remittances all have a positive relative income. The remittances differ from 1000 NRS to 50 000 NRS a month. In table 6.8. the characteristics of the households which receive remittances are mentioned. It is shown that almost all of the households which receive remittances have an income out of labour. Four out of the nine head of the households which receive remittances has a educational level equal or higher as secondary school. Most of the remittances are coming from family members who work in India.

Table 6.8., Characteristics of the households which receive remittances

Occupation HH	Education HH	Income out of labour	Remittances	Country
Hotel owner	≥ Secondary	10,000	32,000	Iraq
Student	≥ Secondary	6,000	5,000	India
Shop owner	≥ Secondary	150,000	50,000	Nepal
Farmer	Primary	13,000	8,000	India
Shop owner	No	13,000	5,000	India
Farmer	Primary	3,000	1,000	Nepal
Student	≥ Secondary	5,000	5,000	India
No	No	0	3,000	India
Farmer	No	5,000	3,000	India

(HH= Head of Household) (amounts in NRS)



Figure 6.7. Importing goods

Life in Bajura is relatively expensive. People are not able to grow all their own rice and grain themselves and many products have to be imported to the region. Because of the absence of roads this is a more difficult task. Transport costs are high because all imported goods have to travel on the backs of people or animals. The expenses the households have are mainly going to food, schooling and interest on debt. The transport costs people have are either null or high. Transportation costs are only made when

people are leaving the district, the only two ways of transportation are with a bus or an airplane. Both ways of transportation have a high minimum price. 31 households have no transportation costs, and do not regularly leave the district. The other 19 households have transportation costs which differ between 1000 and 15000 NRS per month.

Next to the current incomes and expenses people can also have a saving or a debt, which is the result of income and expenses in the past. Eleven households have savings, this are all households which have a positive relative income per month on the moment of the research. The savings differ between 5000 NRS and 200,000 NRS. The amount people have saved is an absolute number, this number does not give information if the savings are enough. 21 out of 50 households indicate to save enough every year to compensate their low season of income. All households who have savings at the moment also indicate that they save enough every year for compensating the low season of income. The other 29 households have problems every year in their low season of income.

Most household which are interviewed have a debt, which ranges between 2000 and 1,000,000 NRS. Only 13 households indicated to have no debt at the moment of the interview. The two households which have the most debt, have invested the money into a business, those households also have more properties and livestock. From all households with a debt more than half have a debt equal or lower than 50,000 NRS.

6.4. Bardiya District

Bardiya district is located in the south west of Nepal in the Terai region and borders Uttar Pradesh in India, as shown in map 6.1. . The border with India is open and the district has an asphalted connection with large urban centres.

6.4.1. Human Capital

Within table 6.1. with the key figures it is visible that also in the Bardiya district there was a difference in literacy rate between males and females in the census of 2001. The fact that more females are illiterate in comparison with males indicates that there is a difference in gender roles. Traditionally women stay at home and do not work, education was therefore not necessary for females. From the fifty interviewed head of households were four respondents unemployed, this were all females. The interviewed head of the households were most of the times male, 19 females were interviewed. So the four of the nineteen females interviewed are unemployed, while all 31 interviewed males were employed. The women who were employed had the same occupations as males, they predominantly work in agriculture and some have a shop.

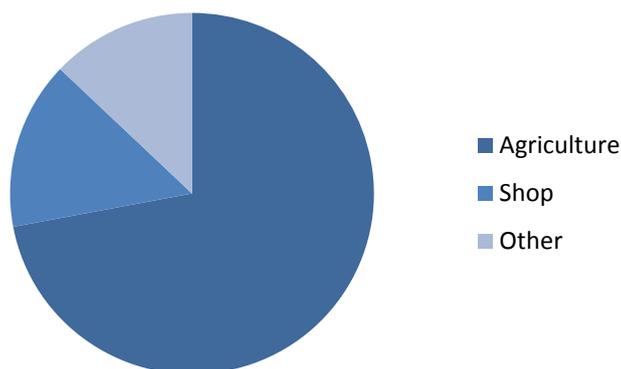


Figure 6.8. Division of occupations in the Bardiya district

The difference in gender roles can, also in the Bardiya district, be found in educational levels. From the interviewed head of households there is a difference between the attained educational level between males and females. Most of the females interviewed had no educational level while the biggest proportion of the interviewed males had an educational level of the primary school. One of the four females which were unemployed had an education, she went to primary school. The other three unemployed females which were interviewed did not have any education.

Table 6.9., Division of highest attained educational levels head of households on gender

	Male	Female	Total
None	6	14	20
Primary school	18	5	23
≥ Secondary school	7	0	7
<i>Total</i>	<i>31</i>	<i>19</i>	<i>50</i>

There is a difference between the highest attained educational level of the head of the households and the highest attained educational level of the whole household. Children often have a higher educational level as their parents in Bardiya. According the District Educational Office are school attainment rates higher than ever in the district.

‘Children have now more opportunities than their parents in the past to go to school. There are still some children who drop out of school and start working in agriculture when they are old enough for the work. Most of the drop out is prevented by low student fees and free education.’

Table 6.10. Division of the highest attained educational level of the household

Educational level	Frequency
None	2
Primary	34
≥ Secondary school	14
<i>Total</i>	<i>50</i>

In table 6.10. the division of the highest attained educational level of the household is shown. It is visible that within the households the educational level is higher than the head of the households. Children go to school more often, drop out rates are still a problem, but almost all children start an

education. In the examined households there were two households where nobody had an education, in these households there are no children. These two households were old people without children. Within the educational level of children there is no difference between boys and girls. The gender roles do not seem to be projected on the children regarding education.

Bardiya is a district with much agricultural land. In almost all households there are subsistent farmers. Most households are therefore able to provide itself with rice and grain. Having enough food is important to stay healthy. People are careful with their food supplies. Although Bardiya is an agricultural ideal district, people mostly eat only two meals per day. From the fifty interviewed households, only eleven households ate three meals per day or more. Children did ate in most cases three meals per day, the older people were used to eat only two times. This is partly because people are careful with their food supply, so that they have enough food for the whole year. It is also part of culture to eat only two times per day in Nepal, most older people are used to only eat two times and do not think it is necessary to eat more.

According the statistical figures of the SHPs in the four research VDCs waterborne diseases are an enormous problem. The percentages of patients with waterborne diseases as a proportion of all treated patients in the SHPs is shocking. The percentages of waterborne diseases is visualised in figure 6.9. below. During the dry season the percentages are between 30 and 50 percent, this increases enormous in the wet season. The percentages rise in the rainy season to 70 percent. The examined households did also indicate that their was a problem with waterborne diseases in the area. From the fifty households, 36 households indicate to have a history with waterborne diseases.

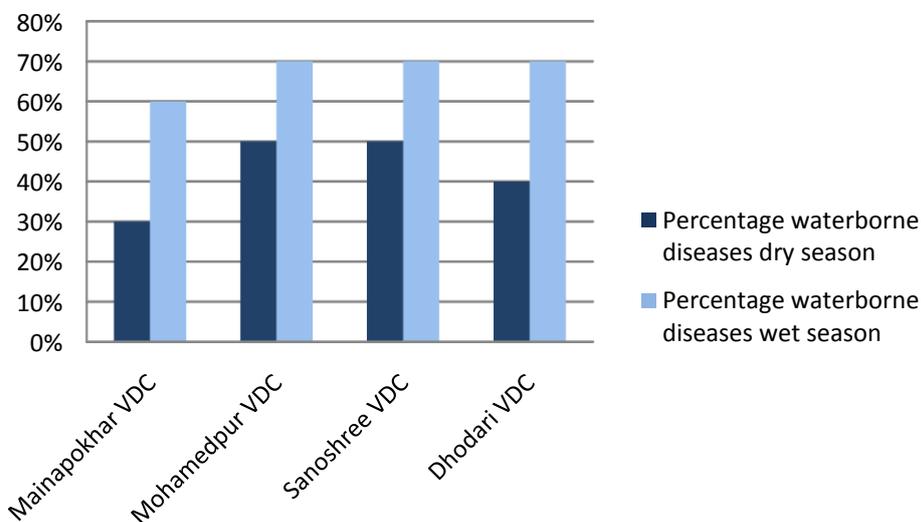


Figure 6.9. Percentage waterborne diseases of all patients in 2010 (SHPs, 2011)

6.4.2. Physical Capital

Bardiya district is connected to the asphalted road network of Nepal. There are two main roads through the district. One of these roads is a direct road between Nepalgunj and the district municipality, Gulariya. The other road is the continuous road trough the south of Nepal which is also the main road trough the Royal Bardiya National Park. These two roads guarantee the connectivity

of the district to the rest of Nepal. Next to the asphalted roads there are many unpaved roads in the district that are accessible for vehicles. There are several direct roads from the Bardiya district to Uttar Pradesh in India, which has an open border with Nepal.



Figure 6.10. Local busses and jeeps on the Gulariya bus stop

Within the district there are several local busses which have multiple rides per day. Bus routes are reaching almost all VDCs in the district daily, and other VDCs every week. There is also a good public transportation system between Bardiya district and the surrounding area's. Jeeps riding the route between Gulariya, the district municipality, and Nepalgunj as a public transportation service. Bigger busses are driving towards, and on the main road that connects southern Nepal, and goes through the district. There is no public transportation that goes towards the border of India.

In Nepalgunj there is an international airport with multiple flights per day to Kathmandu, India and remote districts in western Nepal. With an airport close to the district it is easy and fast to travel from and towards the Bardiya district.

Other sources of infrastructure are represented in the district. Mobile phones are common in the district, all Nepalese providers have connection. Almost the whole district is covered by the mobile services with exception of the Royal Bardiya National Park.

Almost all villages are connected to electricity, but there is a schedule of reducing the load on power, like in most parts of Nepal.

Internet is available in the bigger villages and the municipality of Gulariya. Internet is mainly available in guesthouses, and in internet and phone shops. Not many households have a private internet connection.

Almost the whole district has access to water. One generation back hand pumps were introduced in the Bardiya district. None of the interviewed households disinfected their water. Most people are in the assumption that the water they use is safe. In the last few years the Red Cross and the District Water Supply Office have checked many pumps in the district on arsenic. The pumps were marked as safe when there was no arsenic found in the water from the pumps. The respondents talk proudly about their pumps, and about their safe water. They believe it is safe because of the check by the organisations. All people who indicated that their pump was checked, said their water was safe, without thinking about bacteria's. Only six out of the fifty examined households knew their water was not safe for using directly, while they do use it directly from the pump.



Figure 6.11. Hand pump

According to the statistics from the government, Bardiya has a sanitation coverage of 39 percent. The District Water Supply Office monitors the sanitation coverage every year in all the VDCs. In 2010 there were large differences between different VDCs and their sanitation coverage. In Badalpur VDC the sanitation coverage is about 67 percent, while in Patabhar VDC the coverage is only 15 percent (DWSO, 2011). All schools that were visited had a sanitation facility. According to several students there were things wrong with the toilets in the schools. Toilets are dirty, teachers close the toilets,

and the student may not use them sometimes. Also soap was often not available for the students. The District Educational Office denies that these things happen in the district, and claim that all schools in the district are participating in SLTS programmes. They do recognize that the monitoring system of the SLTS programme does not work appropriately. SHPs and the District Water Supply Office did mention that there were multiple campaigns in the last years to increase the support for sanitation facilities under the population.

6.4.3. Social Capital

Within the Bardiya district households seem to have a high social capital. The qualitative form of measuring the social relationships of people, is the amount of reciprocal relationships people have. These relationships are widely present in Bardiya. Eleven households do not have reciprocal relationships with other households. The other 39 households helped other households or received help from other households without any form of payment. Most households helped each other with the harvesting and planting of agricultural products. Another form of reciprocity is voluntary being part of a formal group or organisation. In Bardiya most households are part of organisations, 39 households have a member which is part of a group or organisation. The most mentioned organisations were agricultural groups, saving and credit, woman groups and forest user group.



Figure 6.12. Women group in Mohamedpur

In the last years several Maoist movements had a large stake in district politics. According to people at the municipality office of Gulariya this had as a consequence that the traditional views of people changed in the district. A part of these traditional views is the hierarchical caste system. According to the officers the caste system is not practiced anymore in the district. A part of the households who were examined in the research, did indeed renounce the caste system, as shown in table 6.11. . The largest proportion of people who do not feel committed anymore to their own caste are from the Sudra caste, the caste which is lowest on the hierarchical ladder. The fact that people do not feel committed anymore to their own caste can be positive, they value people from other castes the same as they are themselves. While it can also be negative, people are not part of their own social group anymore and do not benefit from group beneficiaries.

Table 6.11. Division of castes in the household research

Caste	Frequency	Frequency 'not committed to caste/group'
Brahmin	7	3
Chhetri	1	0
Baishya	21	11
Sudra	9	6
No caste	12	0
<i>Total</i>	<i>50</i>	<i>20</i>

The quantity of the social relationships in Bardiya is measured by the regularity of the contacts outside the households own village. All households have contacts outside their own village. More than half of the households has once, or more times per week contact outside their own village. The

households have mainly contact outside their village with friends and family. The regular contact can be explained by the well developed infrastructure, and easy physical circumstances in the district.

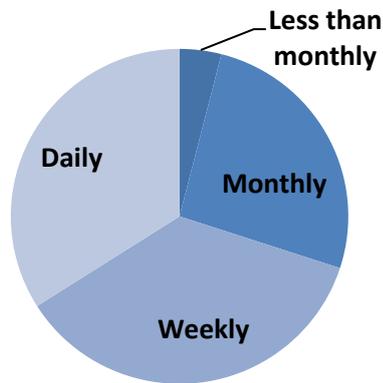


Figure 6.13. Amount of household contacts outside their own village

6.4.4. Natural Capital

All households use timber from their surroundings. The timber is used as firewood and sometimes for building purposes. Other natural resources that are most used from the surroundings of people, are mud and sand. Mud and timber are used to build the traditional housing of the Bardiya district. Although there are more modern buildings in the district which are build with bricks, most houses are still build with the available natural resources. The resources are free available in the surroundings of people, it is a traditional and inexpensive way of building which is still practiced a lot in Bardiya.



Figure 6.14. Traditional house in Bardiya

The Bardiya district has much agricultural land available. Most of the agricultural land is held by only a few people. The amount of land which the examined households own is shown in table 6.12. . There are six households who do not have any land available. Five of these six households without land have other sources of income than agriculture, they have shops or do labour work. The other landless household is an old lady who lives alone and receives money from their children. The households who are the owner of a large amount of land all have an agricultural business.

Table 6.12., Amount of land owned by the household in the research

Amount of Biggha	Frequency
0	6
> 0,00 – 0,50	19
> 0,50 – 1,00	6
> 1,00 – 2,00	8
> 2,00 – 3,00	3
> 3,00 – 4,00	3
> 4,00 – 5,00	2
>5,00	3
<i>Total</i>	<i>50</i>

(1 Biggha equals 1,67 acres)

6.4.5. Financial Capital

According to map 3.3., the map of Nepal with the human poverty indices, has Bardiya a HPI score of which is higher than the neighbouring districts. This means that people in Bardiya are more poor than in the surrounding districts. Bardiya is less poor than Bajura though.

The relative incomes are presented in table 6.13. . 14 out of 50 examined households have a negative relative income. They have more expenses than they have income in a month.

Table 6.13., Division of the relative income of households in NRS per month

Relative incomes	Frequency
≤ -/-10 000	1
-/-9 999 to -/-5 000	1
-/- 4 999 to 0	12
0 to 5 000	26
5 001 to 10 000	4
≥ 10 000	6
<i>Total</i>	<i>50</i>

The households which have a negative relative income do not differ much from the households which have a positive relative income. There is one big difference between the households with a negative and positive relative income. This can be found in the debt people have. From the fourteen households which have a negative relative income, thirteen have a debt. The debts differ between 2.500 and 559.000 NRS. In total 36 out of 50 households have a debt. The distribution of the debts in total does not differ from the distribution of the debts of the households with a negative relative income.

Nineteen from the fifty examined households receive remittances. Remittances are from family members which work mostly abroad. From the nineteen family members which send remittances seven are working in the Middle East, six in India and five in Nepal. There is a difference in the height of the remittances between the countries they are sent from. Remittances from the Middle Eastern countries are higher than the remittances from Nepal and India. There is only one household where the remittances are the only source of income, in all other households the members do also work themselves for their income.

Most of the households have livestock. Livestock is also part of financial capital because it can be transferred into money in times of need. People see livestock as a saving. There are only six households who do not have any livestock. Five of them are a shopkeeper. All households which live from agriculture do also have livestock.

Many households are member of a saving and credit group. Most of the examined households have a debt, this were 36 out of the 50 households. Only 19 households have savings. The households which have savings and debt have less savings as debt. When reviewing the numbers which indicate the financial capital of the people in Bardiya it can be concluded that people in the district are poor. People themselves do not feel poor, the respondents are mostly positive about their financial situation. Nine out of the fifty households indicated to have problems with their income, they cannot compensate their low season of income with their high season. The other households do not indicate that they have problems with their income and the compensation of a financial low season.

6.5. Comparison in livelihoods between Bajura and Bardiya

The two districts differ immensely, on almost every level there are differences between the two districts. Next to the differences there are also some livelihood indicators that are actually a bit corresponding. In this paragraph the five different assets of the livelihoods will be compared between the two districts. Differences and also similarities are discussed. In the conclusion the livelihoods of the two districts are compared with help of a visualisation. The visualisation is based on an interpretation of the data. The differences on quantitative indicators between the districts are statistically checked. The tables with the independent sample's tests can be found in appendix 5.

6.5.1. Human Capital

In both Bajura and Bardiya there are differences in gender roles. Interviewed females work less than males and have a lower educational level. The gender roles seem to be more generation specific in both the districts. Children in the examined households have higher educational levels as their parents and there is no evidence that the gender roles are being inherited. Girls have approximately the same educational levels as the boys in the districts.

Between the districts there is a difference in the educational level of the head of the households which are interviewed, and between the highest attained educational level of the households. In Bajura the respondents and their households have higher educational levels than in Bardiya. In table 6.14. this is made more visible. From the fifty examined households in both districts, a larger proportion has an educational level which is equal or higher as secondary school in the Bajura district, than in the Bardiya district. This is applicable on both the head of the households as on the highest attained educational level in the households. In Bajura multiple households, seven out of fifty, have members which have a bachelor degree, while in Bardiya nobody of the examined households had a bachelor degree. It can be concluded that people in Bajura have therefore higher educational levels than people in Bardiya.

Table 6.14., Differences in the attained educational level between the districts

	Head of the households		Highest of the households	
	Bajura	Bardiya	Bajura	Bardiya
No	18	20	2	2
Primary	13	23	20	34
≥ Secondary	19	7	28	14

Waterborne diseases seem to be a big problem in both districts. In Bardiya the amount of waterborne diseases increases tremendously in the wet season, while in Bajura the difference between the seasons in waterborne diseases is not that big. There is a difference in the nutrition between the districts. In Bardiya people are able to grow more of their required food themselves, while people in Bajura are more relying on food projects of the WFP and the government. A contradicted finding in the questionnaire is that people in Bajura mostly eat three times per day, while most people in Bardiya are used to eat only two times per day.

6.5.2. Physical Capital

The infrastructure of the two districts differ enormously. While Bardiya is reachable per vehicle and travelling within the district is comfortable, it is hard to reach the Bajura district and to travel around within the district. There is one indicator of infrastructure that is more in favour of the Bajura district. In Bajura, people have power all the time, while in Bardiya, like in the most parts of Nepal, there is a power schedule and people have only power on limited hours per day.

The use of (safe) water is different between the districts. Bajura has many rivers and streams coming from the high mountains, most people use the water directly from the river. While in Bardiya most people use hand pumps to gather the water from groundwater. In Bardiya hand pumps are checked by different organisations on arsenic, which has as a consequence that people assume their water is safe to use it directly. In Bajura there are people who disinfect their water, although most people are under the assumption that the water in the rivers and streams is pure and clean.

According to the official numbers of the government, there is a difference in the sanitation coverage between the two districts. Bajura had a sanitation coverage of 11 percent in 2010 and Bardiya around 39 percent. Although the exact numbers of Bajura are doubted by the local government, they do not believe that the sanitation coverage exceeds the 11 percent.

6.5.3. Social Capital

In Bajura people have much less reciprocal relationships than in Bardiya. The nature of the reciprocal relationships are also different. In Bardiya people help each other often with planting and harvesting, while in Bajura the reciprocal relationships are more based on helping others with food and medicines. In Bajura there are also less organisations and groups present than in Bardiya. The groups which are present in Bajura are predominantly focussing on general human rights and development, while in Bardiya the groups are more focussed on people's own development.

There is also a difference between the districts, in the commitment people feel to their own caste. In Bardiya the households indicate more often that they do not feel commitment anymore to their own caste than in Bajura. According to the local officers this is caused by Maoist influences in the regional

politics and culture. In both districts the lower castes feel less commitment to their own caste, than the castes which are higher in the hierarchical ladder.

In the district of Bajura it is more difficult to travel, when comparing to the Bardiya district. This has as a consequence that people have less contact outside their own village in the Bajura district than in the Bardiya district. These differences in the regularity of the contact outside households own village, are significant.

6.5.4. Natural Capital

In both districts people use timber from their surroundings as firewood and to build houses. The other natural resources the people in the districts use are mainly bounded by their physical circumstances. In Bardiya people use mostly sand and mud from their surrounding as a material for their traditional houses. The soil of Bajura is based on rocks, stones are therefore widely available in the district, and used do build houses.

In Bajura there is less land available for agriculture, because of the rocky soil, and the steep hills. Bardiya is flat and the soil is sandy, which is ideal for agricultural purposes. There is more land available and people generally have more land. In both districts there are some households who have much land, and there are a lot of households which have no or less land. There are some households which have more ownership in natural resources and a lot who do not.



Figure 6.15. Differences in the natural capital between the districts are obvious (Left Bardiya, Right Bajura)

6.5.5. Financial Capital

According to UNDP, the district of Bajura has a higher HPI than Bardiya. The district of Bajura is also seen as a more remote and poor district as Bardiya. The relative incomes of the households in both districts also differ. In the research it is found that in Bardiya approximately the same amount of people have a negative relative income as in Bajura. The difference between the districts is the distribution of the relative incomes. In Bajura there are more people with extreme high and low relative incomes, as in Bardiya. In Bardiya more people have a relative income which is close to the middle, a balance in expenses and incomes, when comparing with Bajura. Bajura is more poor according to the UNDP human poverty indicator. In the research is found that in Bajura there are more extremes. There is a bigger difference between the haves and the have nots. The caste where households belong to, have no influence on their relative income.

Table 6.15., Division of the relative income of households in NRS per month

Relative incomes	Frequency Bajura	Frequency Bardiya
≤ -/-10 000	2	1
-/-9 999 to -/-5 000	3	1
-/- 4 999 to 0	10	12
0 to 5 000	17	26
5 001 to 10 000	8	4
≥ 10 000	10	6
<i>Total</i>	50	50

There is a difference in the remittances households receive between the two districts. In Bardiya more households receive remittances. The remittances are send by family in both districts. In Bardiya more people receive higher remittances from countries in the Middle East, while the remittances in Bajura are from India or Nepal. The remittances people receive from India and Nepal are approximately the same amount in both districts.

The fact that people are more poor in Bajura than in Bardiya is endorsed by the amount of savings and debts people have in both districts. In Bajura people have more debts than in Bardiya and the debts are higher. People also have less savings in Bajura than in Bardiya and the savings are lower.

6.6. Conclusion

Bajura is seen as one of the least developed districts Nepal. It was therefore expected that Bajura would score lower on the livelihood assets as Bardiya. Bajura scores indeed lower than Bardiya on most of the livelihood assets.

In table 6.16. the comparison is made between the two districts, on the discussed indicators of the livelihood assets. In the third column of the table the district which scores the highest on the indicator is mentioned.

In the preceding paragraph these indicators are discussed and the reasons why a district scores higher on the indicator is mentioned. In figure 6.16. the table is visualised. The districts score is the result of the amount of indicators of the livelihood asset they score higher as the other district, divided by the total amount of indicators of the livelihood asset.

It is clear that the livelihoods of people in Bajura are more poor than the livelihoods of people in Bardiya. Only on Human Capital the score of the two districts is the same because of the higher educational levels in the Bajura district. According to this livelihood research, the people in Bajura are more poor than the people in Bardiya because they have less access to the livelihood assets.

Table 6.16., Comparison between the districts on the livelihood assets

Livelihood asset	Discussed indicators	The district which scores higher
Human Capital	Gender roles	Same
	Education	Bajura
	Health	Bardiya
Physical Capital	Infrastructure	Bardiya
	Use of safe water	Bajura
	Sanitation coverage	Bardiya
Social Capital	Reciprocity	Bardiya
	Castes	Undefined
	Quantity	Bardiya
Natural Capital	Resources	Same
	Amount of land	Bardiya
Financial Capital	HPI	Bardiya
	Relative income	Bardiya
	Remittances	Bardiya
	Debt and Savings	Bardiya

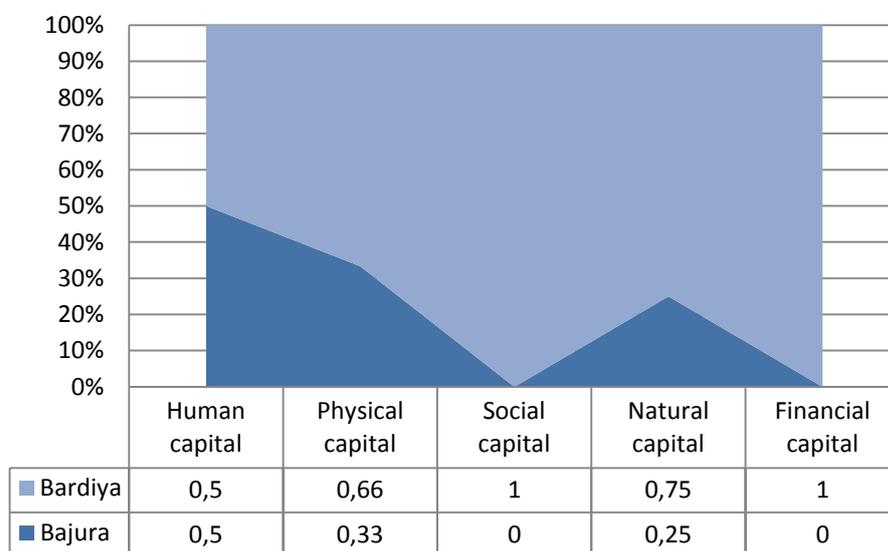


Figure 6.16., Comparison between the districts on the livelihood assets

7. Values and Approaches towards Sanitation

7.1. Introduction

In the previous chapter the different livelihoods of the two districts are described. In this chapter a link is made between the livelihoods of the people in the two districts and their values and approaches towards sanitation use. The sub-question that is leading for this chapter is: *'What are the values and approaches towards sanitation use within the different livelihoods?'*

In this chapter the values and approaches towards sanitation use are discussed, and the explanatory elements of peoples livelihoods are mentioned. The relationships between the different livelihoods of people and their values and approaches towards sanitation use are examined on the base of qualitative and quantitative data.

7.2. The Values and Approaches on Sanitation use

With the use of the household questionnaire, the households are examined on their values and approaches on sanitation use. Sometimes there is less variation in the values and approaches which were examined. Those values and approaches cannot be used in quantitative research methods, while they contain valuable information about the diverse ideas, which people have. The values on sanitation use which have less variation, and which are nevertheless interesting, are: *'the necessity of latrines'*, *'the awareness of the harm of OD for people's health and environment'* and *'menstruation and sanitation use'*. The values and approaches on sanitation use which have much variation and can be used in quantitative analyses are: *'health as reason for the necessity of latrines and sewerage'* and *'washing hands with soap'*.

7.3. Values and Approaches with less Variation

Only three respondents of the hundred examined households have indicated that they thought that latrines are not necessary. These three households are all from the Bajura district. The respondents give as a reason, that installing a latrine is a waste of money, and that they can use money more useful on other products. These three households had some characteristics in common. The heads of the households, which answered the questionnaire, had no education, and the households all had a negative relative income. This corresponds with the reason they mention, they already have money short on the end of the month, and are not interested in latrines because they cannot afford it. They have other priorities for spending money than sanitation facilities.

Probably more households do not think that latrines are necessary. It is expected that many households have given socially desired answers. There were a lot of households which did not have sanitation facilities and did not want to invest money in a sanitation facility. The combination of these two factors is a call for suspicion. The respondents say that a latrine is necessary, while they do not invest themselves in the facility, so it is not a priority to them.

According to local sanitation stakeholders in Bardiya is it hard to convince the local people to invest in a sanitation facility themselves. People want a sanitation facility, but they want it for free. They do not feel the need to invest in the facilities themselves. This is an indication that people do not think latrines are really necessary. If people think it is really needed that they have a latrine, they are willing to invest in the facilities themselves.

Five out of the hundred respondents which are approached, were not aware that open defecation can be a harm for people's health and for the environment. One of these respondent is coming from

the Bardiya district, while the other four are living in Bajura. The five respondents, which did not know that OD could be harmful, were all without an education, and were not able to read or write. Three of the five respondents are of an age above 65, the other two respondents were around thirty.

The five respondents did think a latrine was necessary, but they did not mention health as a reason. Comfort and dignity were the reasons why those five respondents thought a latrine was necessary, the five respondents all did not understand the link between sanitation and health.

Most of the interviewed respondents are practicing OD. Though they are aware that it harms their health and environment. Many households have to deal with waterborne diseases, they understand the link between health and OD, and still they continue to practice OD. This indicates that people are aware that OD can affect their health, but they do not care enough to invest in a sanitation facility, to improve their health situation.

According to a key person in the SHP of Mainapokhar (Bardiya), are people underestimating the effects of OD on their health situation. The SHP has done an awareness campaign in the last year to make people more aware of the effects of OD and unhygienic practices. Although they do not have an indication of the results of the campaign, they are optimistic.



Figure 7.1., Poster awareness campaign SHP Mainapokhar

Many people were reached by the campaign and they were all educated about the effects of OD and unhygienic practices.

In the traditional Hindu culture, women who have their menstruation are seen as ritually unclean. They may not prepare food when they have their menses and have to be isolated in the first days of the menses. (Burbank, 1992: 107) It is known that in some areas of Nepal, woman in their menses still may not use toilets or common places of OD.

The research assistant in Bardiya claimed that women in their menses are not seen as ritual unclean anymore and refused to ask people to their opinions about that practice. There is therefore no data on this value for the Bardiya district.

In the Bajura district four respondents thought it was not good that woman in their menses used the same place of defecation as other members of the household. They all mentioned that it was part of their culture and that it was 'jutho' (ritually impure). The four respondents were all men and living in the more remote parts of the district, not near the district capital, Martadi. They all indicated to have no regular contact outside their own village and they were all feeling committed to their religion and caste.

Most respondents in the Bajura district, 46, do not think it is a problem that women use the same place of defecation during their menses as the other household members. The fact that four respondents did think it is a problem, indicates that the practice of these traditional values is still in place, although not everybody practices them.

7.4. Values and Approaches which can be Quantitatively Analysed

7.4.1. Reasons for the Necessity of Latrines

The respondents mentioned all kind of reasons why they thought a latrine is necessary: comfort, dignity, status, safety, sanitary reasons and health are the most mentioned reasons. The reason why the whole world is investing in sanitation, is because they want to increase the health status of people who have no sanitation facilities. Health is therefore the most important reason to implement sanitation programmes. In Bardiya twelve out of fifty respondents mention health as the most important reason why they think a latrine is necessary. In Bajura more respondents mention health as the most important reason for the necessity of latrines, 22 out of 50 respondents.

In bivariate analyses (appendix 6) it is proven that there are three indicators of the livelihood assets which have a significant influence on the fact if people mention health as the most important reason for the necessity of a latrine.

Respondents which eat at least three meals per day, mention health relatively more times than other reasons for the necessity of latrines, in comparison to respondents which eat less than three meals per day. The relation found in the research is significant.

It is guessing why there is a relationship between these variables. Although it is known that the nutrition of people relates with their health. Again, looking for explanations is guessing, but health can be the determining factor in the relationship of the two variables.

Table 7.1., Relation between nutrition and health as reason for latrines

		Nutrition (3 meals)		
		None	Yes	
Reason latrine	Other	48	18	66
	Health	18	16	34
		66	34	

Another significant relation is found between the households which disinfect their water before using, and the times a respondent mentions health as the most important reason for the necessity of latrines. When people disinfect their water before using, they mention more times health as the most important reason why a latrine is necessary. The relation between these variables indicate a certain outlook of life which people have. When people take the effort to disinfect their water, they understand the link between their drinking water and health. They think about health in their daily life. This is probably also the reason why they mention health more times as the most important reason to install a latrine.

Table 7.2., Relation between the use of safe water and health as reason for latrines

		Use of safe water		
		None	Yes	
Reason latrine	Other	63	3	66
	Health	25	9	34
		88	12	

From the ten households in the research which had an internet connection in their homes, nine mentioned health as the most important reason why a latrine is necessary. Having access to internet indicates that people have more knowledge about ‘the world’ than people who do not have access to internet. Households with internet are not bounded by their physical place of residence, they are able to have contact with the rest of the world. They also have more information available about all kinds of subjects like for instance health. People with internet seem to be more informed about the importance of health concerning sanitation facilities.

Table 7.3., Relation between the use of internet and health as a reason for latrines

		Internet		
		None	Yes	
Reason latrine	Other	65	1	66
	Health	25	9	34
		90	10	

Next to the significant relationships between the quantitative measured indicators of the livelihood assets, and the most important reasons respondents mention regarding the reason why latrines are necessary, there is more interesting information available about this value on sanitation use. Information which cannot be statistically measured and checked on significance, but which indicate some conceptions people have about the necessity of latrines.

During the household research some characteristics were observed when visiting the rural villages. In Mohammedpur, a Muslim community in the Bardiya district, most people did not had a sanitation facility. Only the most rich household of the village, and the imam had a latrine. The reasons why the respondents in that village wanted a latrine were mainly out of status purposes. One of the respondents said: *‘The normal man goes outside to defecate, only a wise man has a toilet.’* In the village people did not wanted to have a latrine because out of health, or safety reasons, but out of status purposes. The only two households which had a latrine in the village had a status of being wise people. When other households thought about installing a latrine, they thought that other people will probably think they were wise too.

In the Bajura district there were some respondents with a latrine which all mentioned the same short reason why a latrine is necessary for a household. They said: *‘I have to go to the toilet, what other reason could their be?’* They did not understand that people could defecate outside, they were used to go to a latrine and did not intend to practice OD anymore. A reaction that indicates a very western and modern value about sanitation use. When people do not see other options than using a latrine it means that they are very used to it and they have broken the tradition of OD.

7.4.2. Reasons for the Necessity of Sewerage

Many respondents did not understand what sewerage was exactly. Sewerage is explained as a system of drainage, where the disposals of latrines are being discharged on a manner that the human faeces are not in contact with peoples drinking water system. The respondents could then give a reason why they thought a system as sewerage was necessary. Most mentioned reasons for the necessity of a sewerage system were: controlling environmental pollution, disposal of wastes

and health. Health is for policy makers the most important reason to invest in sewerage systems. 36 of the hundred respondents mentioned health reasons for the necessity of a sewerage. 22 of them were living in the Bardiya district and 14 in Bajura.

There were four indicators of livelihood assets which have a significant relationship with the variable of mentioning health for the necessity of sewerage. Three of the indicators were having access to certain technologies. Households which have access to mobile phones, irrigation and fertilizers do mention health relatively more times, than other reasons for the necessity of sewerage, in comparison to households without access to these technologies. In the tables 7.4., 7.5. and 7.6. the relations between having access to these technologies and mentioning health for the necessity of sewerage are shown.

Table 7.4., Relation between the use of mobile phones and health as a reason sewerage

		Mobile phones		
		None	Yes	
Reason sewerage	Other	26	38	64
	Health	4	32	36
		30	70	

Table 7.5., Relation between the use of irrigation and health as a reason for sewerage

		Irrigation		
		None	Yes	
Reason sewerage	Other	37	27	64
	Health	12	24	36
		49	51	

Table 7.6., Relation between the use of fertilizer and health as a reason for sewerage

		Fertilizer		
		None	Yes	
Reason sewerage	Other	40	24	64
	Health	15	21	36
		55	45	

Respondents mention health more often for the necessity of sewerage, when they live in a household where they have access to these technologies. People who use mobile phones, irrigation and fertilizers, are more modern than people without access to these technologies. Having knowledge about these technologies indicates that people have modern values on the use of technologies. It is also a modern value on sanitation use to think about health as the main reason why sanitation facilities are necessary. This is probably why there is a relationship between the use of certain technologies and the reason for the necessity of sewerage.

The other indicator of the livelihood assets, which had a significant relation with the main reason why respondents think sewerage is necessary, is having enough savings to compensate the season of low income.

Table 7.7., Relation between saving enough for the low season and health as a reason for sewerage

		Savings enough for the low season		
		None	Yes	
Reason sewerage	Other	29	35	64
	Health	9	27	36
		38	62	

People who save enough in the high seasons of income to compensate their low seasons of income indicate that they think beyond the moment of living. They probably think more about their future than people who do not save enough for the low seasons of income. Households which have enough savings for the low seasons mention health more often, in comparison with people who do not save enough for the low seasons. Having enough savings for the low season is an indication of a characteristic people seem to have, they think about the future and about what is best for them, not only for the moment itself, but also for the coming period. This way of life is probably the reason why the respondents mention health for the necessity of sewerage. They think about what is best for them and for their future. Sewerage can contribute to the future of people, to their health.

7.4.3. Washing Hands with Soap

In the traditional Nepali culture washing hands is a common habit. Before eating the hands have to be clean. Traditionally water is seen as pure, washing hands with only water will purify people's hands (Burbank, 1992).

In almost all sanitation programmes hygiene education is also included. When people are more educated on hygiene, they will have more hygiene practices. This will have benefits for people's health status. Washing hands with soap is one of the hygienic practices that is educated in sanitation programmes. Many people still wash their hands with only water, or with natural products as mud and ashes. Mud and ashes can also clean hands on a hygienic manner, but in those cases it has to be clean and not used twice. In observations it is shown that many people who use ashes and mud for cleaning purposes did not use clean ashes and mud, but reused the products. Washing hands with soap is therefore the most hygienic manner, it implicates that people have modern values on the method of hand washing, than people who use the natural products or only water.

58 out of the hundred examined households used soap for cleaning their hands. There is a big difference between the Bajura and Bardiya district in the use of soap. In Bardiya 45 out of fifty households use soap, in Bajura this is much less, 13 out of fifty households use soap. Probably the most important reason why people in Bajura use much less soap than people in Bardiya to wash their hands, is the absence of sanitation and hygiene education in the area. Although the SLTS programmes in the Bardiya districts were not in place, there were many campaigns to make people aware of the implication of sanitation and hygiene practices. This was lacking in Bajura, there were no sanitation or hygiene programmes in place, and people were never educated about the link between sanitation and hygiene and their health.

There are many significant relationships between livelihood indicators and the variable of hand washing with soap. Many of these relationships are based on the difference between the two districts. An example is the relationships with the social capital indicators. Households in Bajura score much lower on these indicators than households in Bardiya. In Bajura households also use less times soap, in comparison with Bardiya. The relationship between the social capital indicators and the use of soap is significant, while it is probably a sham effect. They are both influenced by the district where the households are living.

There is a notable relation between a livelihood variable with the method of hand washing. This is the educational level of the head of the household. When the head of the household has a higher educational level, it is more likely that a household uses soap as a method of washing hands.

Table 7.8., Relation between the educational level of the head of the household and using soap to wash hands

		Educational level head of the household			
		None	Primary	≥ Secondary	
Soap	None	21	9	12	42
	Yes	17	27	14	58
		38	36	26	

This relation cannot be explained by the district where the households live. Because the head of the households in Bajura have higher educational levels as the head of the households in Bardiya. Although they use less soap in Bajura as in Bardiya to wash hands, the relation remains. A household uses soap more times for washing their hands when the head of the household has a higher educational level. Hygienic practices can be seen as a practice that more intellectual people practice, people with more modern values, with a higher education.

7.5. Conclusion

This chapter discussed the relationships between the values and approaches people have on sanitation use regarding their livelihoods. Between the two districts there are differences in all values and approaches on sanitation use. The people in the Bajura are less modern regarding the values and approaches on sanitation use in comparison with Bardiya.

The few times respondents indicated that latrines were not necessary, or that they did not know about the harm of OD for health and environment, the respondents were almost all coming from Bajura. There is evidence that there are still communities in Bajura which have very traditional values regarding sanitation use. An example is the value about women in their menses. There were respondents who think it is not appropriate for women to use latrines or common places of OD when they are in their menses. The number of respondents which had these traditional values was not high, but it recognises the existence of these values in certain communities in Bajura.

In Bajura there were also less respondents which mentioned health as a reason for the necessity of latrines and sewerage. There are also less households using soap in Bajura than in Bardiya. So it can be concluded that the inhabitants of the Bajura district have more traditional values regarding sanitation use than the inhabitants of Bardiya.

Conclusions can also be made regarding the relations of the livelihoods of people towards their values and approaches on sanitation. Most of the indicators of the livelihoods had something in common. It is the lifestyle of the households which has an influence on the modernity of the values and approaches of sanitation use. Respondents seem to have more modern values on sanitation when they have access to technologies, like internet and mobile phones. When households think about their future, when they save in their high season for compensating the low season, they are also more modern in their sanitation values and approaches. A final conclusion is that the education of head of households has an influence on the use of soap, when people wash their hands. Education is a variable which has a positive relationship with the modernity of values and approaches towards sanitation.

The differences between the two districts regarding values and approaches on sanitation are big. These differences cannot be exclusively explained by the livelihood indicators. There are always more variables which influence the modernity of the values and approaches besides the livelihood indicators. Not everything can be measured or explained. A conclusion which can be made is that, the livelihoods of the inhabitants of the two districts differ tremendously, as well as the values and approaches the people have towards sanitation use. The fact that the livelihoods and the values and approaches on sanitation of the two districts are very different, address the need of a sanitation programme which is based on the specific local characteristics.

8. Comparison between the GSF Programme and Districts

8.1. Introduction

This chapter is the final empirical chapter of this thesis. Within this chapter the gathered and discussed information from the previous chapters is combined. Linkages are made between the GSF programme as explained in chapter 5, the livelihoods within the districts as described in chapter 6, and the values and approaches towards sanitation use from chapter 7. The sub-question that will be answered in this chapter is: *‘Which livelihood aspects and cultural values and approaches have an influence on the Global Sanitation Fund programme as planned in the Bajura and Bardiya district?’*. The two districts are being compared in the following paragraphs. First the different livelihood assets are discussed followed by the values and approaches on sanitation use.

8.2. Livelihood Assets

8.2.1. Human Capital

In table 8.1. below the main characteristics of the human capital indicators are summarised for both districts.

Table 8.1., Main characteristics of human capital within the districts

	Bajura	Bardiya
Gender	Gender roles in education and occupations seem to be something from the past.	Gender roles in education and occupations seem to be something from the past.
Occupations	Most people work in agriculture, but less than in Bardiya.	Most people work in agriculture.
Education	Big differences in education between the educational level of the generations. Also big differences between households in educational levels. No sanitation and hygiene education.	Difference between the educational levels of the generations. Low educational levels in Mohammedpur, a Muslim community. SLTS programmes on schools not implemented.
Health	Health problems in the district based on malnutrition and waterborne diseases.	Health problems in the district based on waterborne diseases.

The two indicators of human capital which will certainly influence the implementation of a sanitation programme are education and health. The GSF programme wants to implement a school programme to support the district wide ODF campaign. The effectiveness of a school programme depends on the quantity and quality of education in the districts.

In both districts there is a notable difference in the educational levels of households. Within some households everybody attends school, and reaches a high educational levels, while other households lack behind in educational levels, and have multiple children which drop out of school on early ages. Households which have less attendance at school will be less involved in the sanitation programme, than the households which have more children in school and at higher levels of education. This is a problem within both districts. Some households will be less involved in the sanitation programme, and will be less influenced because of the quantity of household members which attend school. Some households will therefore be less reached.

The quality of education in the districts will also influence the implementation of a sanitation programme as the GSF. Within the Bajura district there is nothing known about sanitation and hygiene education. Teachers are not trained, and the school management does not understand the need of sanitation and hygiene education. Before the school campaign will be implemented in the district, it is necessary that the school management and teaches support sanitation and hygiene education. If they are not trained right, and do not understand the need of the campaign, the programme will be less effective.

In Bardiya there should already be a SLTS programme on all government schools in the district. Observations showed that the programmes are not in place, they are not being implemented yet. The school management is informed, and they do know that they are supposed to teach children sanitation and hygiene practices. At the implementation of the school programme of the GSF it is therefore important they do not rely on the existing programmes on schools. The school management has to be convinced more about the necessity of the programmes, and support has to be created.

Bajura is a district with an official status of food insecurity. The government and WFP both take care of the supply of rice and grain in the district. Toilets which are build by the DDC office in the municipality of Martadi, are most used for the storage of food and firewood. The conclusion can be made, that the people in Bajura have other priorities than sanitation. Having enough food is more important to them, as sanitation facilities are. Both will influence their health, because there is also a problem with waterborne diseases in the district. Food security is a number one priority in the district and a sanitation programme will be influence by this. People will not spend much money on sanitation when they have troubles with malnutrition.

In both districts there is a problem with waterborne diseases. People do experience health problems which can be reduced by the implementation of sanitation facilities. When people do understand the link between sanitation and health they will probably be more willing to invest in sanitation. The presence of waterborne diseases in the districts will increase the support for sanitation programmes.

8.2.2. Physical Capital

Table 8.2., Main characteristics of physical capital within the districts

	Bajura	Bardiya
Infrastructure	The district is only reachable by airplane and a bus over a seasonal road. Travelling within the district is done on foot.	The district is connected to the road network of Nepal and is close to an (inter)national airport. Within the district are many roads and local transportation is well developed.
Technologies	There is 24/7 electricity, mobile phones have limited coverage.	The district has a load shedding schedule for the electricity and mobile phones are a common use.
Safe water used	Some people disinfect their water. Water is mainly from rivers, most people believe this water is safe and pure.	Hand pumps are checked on arsenic, people do not disinfect their water because they believe it is safe.
Sanitation	11% sanitation coverage	39% sanitation coverage

The physical capital which is present in the two districts will be of an influence on the implementation of a sanitation programme.

The basic infrastructure of Bajura is not well developed. The district is not easy to access and within the district there is only one seasonal road. Latrines have to be transported on the backs of animals. The trails are inhospitable and the animals stumble on a regular base. When these animals carry the porcelain latrines and they stumble, the latrines will break. The transportation of latrines and other building material for sanitation facilities will therefore be an important obstacle for the implementation of the GSF programme. It is also more difficult to put up a well developed sanitation market in the district, when the supply of latrines and building materials is lagging behind.

The differences in infrastructure are enormous between Bajura and Bardiya. Bardiya is an easy accessible district and travelling through the district is good possible. The well developed infrastructure will have a positive influence on the implementation of the GSF programme in the district. The materials that are necessary for building sanitation facilities can be transported on an easy manner. The open border with India has also as a consequence that there will be an access to cheap building materials and latrines. The infrastructural characteristics of Bardiya will therefore ease the implementation of a sanitation programme.

The GSF programme wants to implement a media and communication campaign in the districts to support the ODF campaign. In both districts there is less access to media. Radio and television are a scarce. Newspapers are not available in Bajura and not everybody has access to a mobile phone. A media and communication campaign will have little effect in Bajura because not many people will be reached. In Bardiya more people are reached, while still a share of the population stays unreached. Media and communication services are not that well developed in both the districts, in Bajura it is worse as in Bardiya, this will negatively influence the GSF programme.

The goal of the GSF programme and the governmental sanitation policies to reach ODF. In Bajura the official sanitation coverage rate is 11 percent, and in Bajura this is 39 percent. These low sanitation coverage rates will influence the end objectives of the sanitation programme negatively. There are not many sanitation facilities in the district, so many have to be build. Most of the population still practices OD, people do not feel ashamed for practicing OD, because most people still practice it. The practice of OD is still common and it is hard to change the habits of people when the majority of the population practices the habit. The support for using sanitation facilities in stead of OD will therefore be hard to accomplish.



Figure 8.1. Fallen latrines on the side of the trail in Bajura

8.2.3. Social Capital

Table 8.3., Main characteristics of social capital within the districts

	Bajura	Bardiya
Reciprocal relationships	Only little reciprocity relationships are present in the district. Organisations which are present in the district are development based.	Most people help others with harvesting and planting of agricultural products. In most households people are a member of a organisation.
Main Castes/ Ethnic groups	Mainly Brahmin and Chettri.	Tharu's and Muslims
Contact outside own village	Less contact outside village due to the inhospitable area.	Many contacts outside villages, mainly with family and friends.

ODF campaigns are more effective when people have a higher social capital. Existing networks can be used for spreading the campaign. It is a common say that information travels fast from the word of mouth. When people have more contacts outside their village and have more qualitative relationships the campaign will spread more easy than when people have less contacts. This is why social capital will influence the implementation of the GSF programme. In Bardiya the implementation of an ODF campaign will be prosperous, while the implementation of a ODF campaign will be more difficult in Bajura, because of the lack of social capital.

8.2.4. Natural Capital

Table 8.4., Main characteristics of natural capital within the districts

	Bajura	Bardiya
Resources	Timber, water, stones, sand and plants	Timber, mud and sand
Amount of land	Most people own less land, only a few people own most of the land. Not much land available in the district for agricultural purposes.	Most people own less land, only a few people own most of the land.

The natural resources people use in Bajura and Bardiya may be different, but in both districts they use the free available natural resources for building their houses. The buildings of the sanitation facilities can therefore be build with the available natural resources. This keeps the costs of the sanitation facilities low. In Bajura this will be most necessary, because it is more difficult to import building materials in the district. The availability of the natural resources has a positive influence on the sanitation programme, the costs can be kept low, in this way the sanitation facilities are more affordable for people which have less money.

8.2.5. Financial Capital

Table 8.5., Main characteristics of financial capital within the districts

	Bajura	Bardiya
HPI	Between 50-65	Between 40-45
Relative income	There is a big difference between the relative incomes in the district.	Most people have a relative income between -5000 and 5000 NRS.
Remittances	18% of households received remittances, mainly from Nepal and India.	38% of the households received remittances, mainly from Nepal, India and countries in the Middle East.
Saving and Debt	Most people have a debt, less people save money.	Most people have a debt, less people save money. Many saving and credit groups in the district.

In both districts there are many people who have a negative relative income. Those people have more expenses than they have income. The GSF programme wants to trigger people to build sanitation facilities themselves. Within the GSF programme there is no room for hardware policies or subsidised programmes. The people who cannot afford the sanitation facilities are therefore excluded from the programme. This has a negative influence on the effectiveness of the sanitation programme. Not all people in the districts can afford to build a sanitation facility and will continue practicing OD. This problem will be more present in the Bajura district than in the Bardiya district, because people seem to be more poor in Bajura.

8.3. Values and Approaches on Sanitation use

Table 8.6., Main characteristics of values and approaches towards sanitation within the districts

	Bajura	Bardiya
Necessity of latrines	Three respondents did not think a latrine was necessary.	All respondents think latrines are necessary.
Harm OD for health and environment	Four respondents did not know that OD could be a harm for health and environment.	One respondent did not know that OD could be a harm for health and environment.
Menses and sanitation use	Four respondents mentioned cultural restrictions for the use of sanitation for women in their menses.	-
Reasons for necessity of latrines	44% Health, 26% Sanitary purposes, 14% Environment	26% Comfort, 24% Health, 20% Safety
Reasons for necessity of sewerage	42% Sanitation management, 28% not necessary, 20% Health	34% Sanitation management, 24% Environment, 20% Health, 20% Not necessary
Method of hand washing	Most people use ashes and mud	Most people use soap

All values and approaches which people have on sanitation use, influence the implementation of sanitation programmes. It is mostly obvious if the values and approaches have a positive or negative influence on the implementation of a sanitation programme. The most important influences will be

the conservative traditional values some communities still have and the reasons why people think sanitation is necessary.

In Bajura the implementation of the GSF programme will be more negatively influenced by the values and approaches people have on sanitation use. Although most people think that latrines and sewerage are necessary and that woman can use sanitation facilities during their menses, evidence is found that there are still people who think the opposite. In Bajura there are still some communities where people have conservative traditional values, also about sanitation. It will be more difficult to trigger these people to install sanitation facilities than people with more modern values on sanitation.

The reasons why people think a latrine is necessary is also of an influence for implementing a sanitation programme. Most people do not have a sanitation facility, while they have a reason why they should have it. When the sanitation programme enlarges these reasons within the ODF campaign the effectiveness will be higher. In the campaign people have to be persuaded to install a sanitation facility themselves. Responding on the reasons people think latrines are necessary, can influence the implementation of the sanitation programme on a positive manner. In Bardiya most people wanted a latrine because it is more comfortable than practicing OD. When the focus of the ODF campaign is on the comfort of a latrine, the effectiveness of the campaign will probably be higher than the focus of the campaign is on the environmental issues.

8.4. Conclusion

According to the planning of the GSF programme, there will be several projects in all implementation districts. This will be a district wide ODF campaign, supported by a school programme and also a campaign with the use of media and communication technologies. These campaigns should persuade people to change their behaviours fro OD to ODF.

Within Bajura some livelihood aspects are of a great influence on the implementation of a sanitation programme. Education, mainly the absence of any form of sanitation and hygiene education, has a negative influence on the support of a sanitation programme. Within Bajura people have a serious problem of food insecurity, that is therefore their number one priority, sanitation is not, and will not be, their first priority. Another livelihood factor with major implications, is the underdeveloped state of infrastructure in the region. The sanitation program should not only focus on creating demand for sanitation facilities, creating a secure form of supply is also necessary.

Bardiya is more developed than Bajura, the sanitation coverage is also higher, and implementing a sanitation programme will be more easy in Bardiya than in Bajura. People have already been in contact with sanitation and sanitation programmes. People have a higher social capital and it will therefore be more easy to implement a district wide campaign for creating ODF support. Within the district of Bardiya, the livelihoods of people are suitable for a well developed sanitation market. The GSF programme only has to optimise the utilities of the district.

9. Discussion and Conclusion

9.1. Introduction

This is the final chapter of this thesis. In this chapter an answer is given on the problem statement of this thesis. First the findings of this research are compared with information gathered in literature in a discussion. Subsequently a conclusion follows, with the answer on the problems statement on the base of findings of the research. Finally the chapter ends with some recommendations for sanitation programmes in rural Nepal.

9.2. Discussion

Further on in table 9.1. the comparison is made between literature and research findings. The table gives information about the information which is found in the literature about a subject or approach, and what is found in the research about the subjects and the practicality of the approaches in the districts.

In the theoretical chapter four main software approaches for sanitation programmes were mentioned, which are most applicable for the sanitation sector in southern Asia. These four software approaches are: Community Led Total Sanitation, School Led Total Sanitation, Integrated WatSan and Social Marketing of Sanitation. These four software approaches all have some strong and weak points, and none of the approaches are better than the others. When implementing a sanitation programme it is necessary that the program fits the local aspirations and priorities. Zoomers (2008) already mentioned the importance of the balance between rural development and the rural livelihoods of people. Not all software approaches are therefore useful for the two research districts.

In Bajura there is no experience with software sanitation programmes. The only sanitation programme known is the installation of 85 sanitation facilities in the district capital of Martadi. Most of these sanitation facilities are not used, which indicates that people do not understand the importance of sanitation facilities. They store food in the buildings, while their health situation can be improved by using sanitation facilities instead of practicing OD (Botting et al, 2010; WSSCC, N.D.; WSSCC, 2010). Within the district there is a lack of food security, which has high food prices as a consequence. People have to spend a large part of their income on food, and a significant proportion of the population of the district cannot afford investing in sanitation facilities. Only a software programme is therefore not enough. People are uninformed about the necessity of sanitation, and behaviours have to be changed to reach ODF. There is therefore need for a sanitation programme which combines hardware and software implementations. The most applicable sanitation programmes for Bajura are CLTS and SLTS when they are combined with a hardware implementation.

The integrated WATSAN approach is not applicable because there is no water supply scheme in the region. Social Marketing of sanitation is also not a possibility, because Bajura is an inhospitable region, where a well developed sanitation market is not possible in the near future.

The Bardiya district is a completely different district as Bajura. In Bardiya multiple sanitation programmes are already in place. Hardware as well as software policies are already implemented in the district. Most people do know the health implications of practicing OD, and they have many waterborne diseases, they also underestimate the health implications. They know the benefits of sanitation, while they still practice OD. A software programme should change the behaviours of

Table 9.1., Comparison between the literature and research findings per subject

Subject/Approach	References	Literature findings	Research findings
Difference between rural and urban sanitation coverage	WHO, 2008	In the developing world there is much less coverage in improved sanitation facilities in rural areas in comparison to urban areas.	The two rural districts which were researched had a lower sanitation coverage as the urban districts of Nepal. Within the Bardiya district the sanitation coverage of the municipality Gulariya was also higher as the mean sanitation coverage of Bardiya.
Relation between sanitation and health	Botting et al, 2010; WSSCC, N.D.; WSSCC, 2010	The most important problem regarding the lack of access to sanitation facilities, is the bigger chance on illness. Diarrhoeal diseases can be prevented with implementing adequate sanitation and safe drinking water. Community problems related to these health problems are the inability to work and the school drop out rates.	Most respondents indicated that they understand the relation between health and sanitation and hygiene. Nevertheless people practice OD while they have a lot of waterborne diseases. Key persons of SHPs in Bardiya indicated that the health problems resulting from OD practices are underestimated by the population. None of the respondents mentioned economic problems which were due to illness.
Community Led Total Sanitation	GoN, 2010; Kar & Chambers, 2008; WSSCC, 2010	Hardware policies do not work enough. Behavioural change is important. Rural knowledge has to be acknowledged and low cost toilets have to be available.	Rural knowledge about sanitation is limited in Bajura. The knowledge of building can be used in both districts, people build houses from natural available resources, the buildings of the sanitation facilities can also be build from natural resources, which is more cheap. Only low cost toilets will not be enough, there are people in both district who do not have the money to build a sanitation facility. A form of hardware policy is necessary.
School Led Total Sanitation	Adhikari & Shrestha, 2008; GoN, 2010	Based on CLTS, with a institutional backing on schools. Schools are the most important for the behavioural change of communities. No hardware policies are included. Only sanitation and hygiene education is needed.	In Bardiya the SLTS programmes were not implemented within the schools, although the school management knew it was supposed to be implemented. In Bajura there were never sanitation programmes, teachers and school management did not understand the need of sanitation and hygiene education. The SLTS approach will not work if the schools do not support the programme. In both districts there are people who cannot afford to invest sanitation facilities themselves. Any form of hardware policies is needed.
Integrated WatSan	GoN, 2010	Based on areas which already have water	Not adequate for Bajura, because the district has no water supply

		<p>supply, try to close the gap between water and sanitation coverage.</p> <p>Software approach to change behaviour and hardware approach to install latrines.</p>	<p>scheme.</p> <p>In Bardiya most people have water supply. Hardware and software policies are needed to provide the whole population of Bardiya with sanitation facilities. Behavioural changes are necessary as well as hardware policies to provide the poorest people with sanitation facilities.</p>
Social Marketing of Sanitation	Unicef, N.D.; UN-Habitat, 2006	<p>Sanitation education is not needed. Change of behaviour through mass campaigns.</p> <p>Needs and demands of communities have to be in balance.</p> <p>Different sanitation facilities have to be available, low and high cost.</p> <p>All households have to be reached by the supply chain.</p>	<p>In Bajura people did not have many contacts outside their village and they did not travel much. Only a campaign is not enough to reach all people. Because of the physical characteristics of the landscape, it will be difficult to have a well developed supply scheme for sanitation products in the region, which reaches all households.</p> <p>In Bardiya this approach can work. The district has a well developed infrastructure and people travel regularly through the district, which contributes to the spreading of a campaign.</p>
Livelihood approach	Chambers & Conway, 1991; De Haan, 2006; Eldis, 2011; Zoomers, 2008	<p>A livelihood is sustainable when it can cope with and recover from stress and shocks. A sustainable livelihood will also provide sustainable livelihood opportunities for the next generation.</p> <p>Rural development should be in balance with the aspiration and priorities of people.</p>	<p>In Bajura people have a number one priority which is food security, this is not and will not be sanitation. The sanitation programme should not have a negative influence on the food security of people, otherwise it can be a harm for the livelihoods of people in Bajura.</p> <p>In general, the sanitation programme will help to make the livelihoods of rural people in the districts more sustainable. Health's will probably improve. With the implementation of sanitation within the districts a fundament is made for the sustainable livelihoods of the future.</p>
Influence livelihood indicators on the sanitation programme	GoN, 2010; UN-Habitat, 2006	<p>The accessibility of the programme area is important for transport of materials and practitioners.</p> <p>When people do not have the money to build their own sanitation facilities it will not be enough to only implement a software programme.</p>	<p>It is found that it will be more difficult to implement a sanitation programme in Bajura than in Bardiya, this is mainly based on the low state of basic infrastructure. Transport is more difficult and more expensive.</p> <p>In both districts there are people who cannot afford it to build sanitation facilities themselves. Only a programme to change behaviour will not be enough, some people have to be financially supported.</p>

people, although this will not be an easy task. All four software programmes can be implemented in the district. Within the district travelling is easy, which has a positive influence on the implementation of a campaign and on the distribution of sanitation facilities. Only a software programme will probably be not enough, because there are also poor people living in Bardiya which cannot afford building sanitation facilities. So next to the software programme, there should be a funding mechanism to help poor people with the building of sanitation facilities.

9.3. Conclusion

The problem statement of this thesis is the following: *'What are the main points of attention with the implementation of a sanitation programme regarding cultural values and approaches towards sanitation in the Bardiya and Bajura district?'*

As expected before the research, the two districts are totally different from each other. The livelihoods of people living in both districts are on almost all livelihood assets diverse. The GSF programme which is going to implement sanitation programmes in both districts, states that it is people centred and demand driven. Nevertheless it is already decided that every district will get a district wide ODF campaign which includes a school programme, and an implementation of a media and communication strategy.

Within the livelihoods of people living in the districts there are also some challenges found which can limit the implementation of a sanitation programme, like the GSF programme. Next to different livelihood indicators which are a challenge for the implementation of a sanitation programme, there are also some cultural values and approaches towards sanitation which are present in the district, and which can be a challenge for the implementation of the GSF programme.

In Bajura the challenges regarding the livelihood indicators for implementing a sanitation programme are obvious. The district is hard to reach, travelling within the district is not easy, inhabitants of the district have less contact outside their own village, and the district is relatively poor.

The livelihoods of people in the Bajura district, have also an influence on the cultural values and approaches of people in the district. Bajura is a remote district, where the more modern values are not completely spread. This causes cultural challenges for the implementation of a sanitation programme. Evidence is found that there still are communities in the Bajura district which still have conservative values and approaches towards sanitation use. There are people which still support the traditional Hindu values, where women cannot use sanitation facilities during their menses. It will be difficult for the sanitation programmes to get support in all the communities of the district, when these traditional values and approaches are still in place.

Besides the traditional Hindu values, more values and approaches will be a challenge for the sanitation programmes in Bajura. Not all people understand the link between sanitation, hygiene, and health. The sanitation programmes which are being implemented, should therefore start from the beginning. There is no knowledge base where the sanitation programme can rest upon. People are not aware of the benefits of hygiene and sanitation, the behavioural change is not started yet. This is a big challenge for the sanitation programmes, because there is nothing known about the reactions towards sanitation and hygiene education in the district, and everybody still has to be informed about sanitation and hygiene issues.

Bardiya is a district which has less challenges regarding the livelihood indicators for the implementation of a sanitation programme. The district has a well developed infrastructure, an open border with India, inhabitants of the district have many contact outside their own village, and water is almost everywhere available.

Waterborne diseases are a problem in the district although almost everybody understands the link between sanitation, hygiene and health. The main challenge in the Bardiya district regarding the cultural values and approaches for the implementation of a sanitation programme is the stiffness of the people. People understand that it is better for their health to install sanitation facilities, while they hold on to their traditional practice of OD. It will be a big challenge to convince the inhabitants of Bardiya to build sanitation facilities. Although SLTS programmes are not in place, there have been several campaigns about sanitation in the district. These campaigns have not reached everybody, and not convinced all the reached people. The new campaign have to be more decisive and has to convince the people on new manners.

9.4. Recommendations Sanitation Programmes

I have some recommendations towards sanitation programmes which are going to be implemented in Nepal. There is one more general recommendation, and there are two recommendations are specified on the Bajura and Bardiya district.

First a general recommendation for all sanitation programmes in Nepal. All districts in Nepal are different, different in culture and different in physical circumstances. Sanitation programmes can become more effective, and specialised programmes are needed for every district. Programmes should be tailored to local needs, demands and cultural perspectives. These factors are not available in databases which give statistical information about financial indicators and sanitation and water supply coverage. Social research is needed before contracting the organisations which will implement the sanitation programme. Too many contracts are signed by organisations with less knowledge about local culture or local physical circumstances. People who have never been to the region are choosing the organisations for implementation, and therefore the manner of implementation. When people with more expertise about the region would make these choices, the programme will be undoubtedly more successful. In that way it is more certain that the right way if implementing of the programme is chosen. An implementation that matches the goals of the sanitation programme as well as the needs of the local community.

In the Bardiya district people are mostly aware of sanitation and hygiene. Although people are educated on these matters, and their influence on people's health, people still do not invest in sanitation facilities. To change this behaviour and to change the current dogma of: *'our grandfathers went outside for defecation, my father went outside for defecation, why should I not go outside?'*, a new form or triggering is necessary. Education and campaigns will probably be not enough, because people do know the benefits of sanitation facilities. Incentives, subsidies or rewards to promote the construction of sanitation facilities can be used to trigger people to construct sanitation facilities. People are aware of the problems coming with OD, while they do not want to invest in the construction of sanitation facilities. A financial rewarding system will therefore be a very good tool to trigger the people to build their own facilities.

In Bajura people are not educated yet on sanitation and hygiene issues. Construction of sanitation facilities in the region is not equal to increasing the sanitation coverage. People use the sanitation facilities which are placed by the DDC for the storage of foods and firewood. When people will be educated on sanitation and hygiene awareness, there will be probably more commitment towards their installed sanitation facilities. Next to this educational programme there should be a programme to improve the livelihoods of people in Bajura. Sanitation will never be high on the priority list of people when they do not have enough food, income or basic infrastructure. Basic community development has to be considered when implementing a sanitation programme in the Bajura district.

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Appendix 1, Operationalisations

Human Capital

Employment

This variable is applicable on the head of the household. Within the household identification table the respondents were asked to their daily occupation. The responses given were open answers, this is recoded to a dichotomous variable. The two categories are based on having a paid daily activity or being at school. Respondents who do not have a paid daily activity and who are not attended to school are the reference category.

Education

In the household identification table the respondents were asked for their, and their family members, highest attained educational level. The responses given were open answers, this is recoded to an interval variable where 0 equals to the lowest educational level (no education or playgroup) and were 16 equals the highest educational level (PhD).

The education attainment level can be measured with different methods. In this study two methods are used: the educational level of the head of the household, and the highest educational level of the household.

Nutrition

In the survey the respondents were asked the following question: 'How many times a day do you have a complete meal in the wet/dry season?'. The respondents were asked for two answers, one for the wet- and one for the dry season. These answers are summed up and divided by two. This numerical variable is recoded to a dichotomous variable. The reference category is ascribed to respondents who are not able to consume three meals or more a day.

Health

In the survey the respondents were asked some questions about their health. The two questions used in this thesis are: 'Do you or anyone of your family members have a history of waterborne diseases?', and 'How many times were you or your family members ill due to waterborne diseases in the last year?'. These questions combined form the health variable of a family.

Physical Capital

Use of safe water

Respondents are therefore asked how they know that the water that they use is safe. Possible answers were: 'it is an official tap', 'I disinfect the water by boiling', 'I disinfect the water with chemicals', 'the use of solar disinfection', 'it looks safe', 'I never got sick of it', and an possibility to give an open answer. The answer is recoded into a dichotomous variable were the reference category is the use of unsafe water. Water is codes as safe when people disinfect their water.

Sanitation facilities

In the survey the respondents are asked the following question: 'Do you or your household have your own latrine?'. The reference category are the respondents who do not have an own latrine.

Next to this data from the survey this variable also consist of the statistical information gathered by the stakeholders about the sanitation coverage and sanitation facilities in schools.

Technologies

The respondents were asked how much technologies they currently use. The technologies which were asked were the following: 'electricity', 'internet', 'mobile phone', 'irrigation', 'pesticides', 'fertilizer', 'improved sanitation facilities', and 'other'. Within this variable the amount of technologies used are determining. The range of the variable lays between 0 and 8.

Within the analyses the different technologies are also used to give more information when people use that type of technology. Dummy variables are made of the technologies with as a reference category the people who do not use the technology.

Social Capital

Reciprocity relationships

Reciprocity relationships are helping others or getting help from others without getting paid.

Respondents were asked in the survey if they helped others or got help from others. They could answer the questions with yes and no.

Groups

Within the survey the respondents are asked if they, or a family member, are part of a formal group or organisation. As a follow up question they are also asked if they are an active member. Both questions could be answered with yes and no.

Quantitative Relationships

Respondents are asked if they or their family members have regular contact outside their village. The answer possibilities were: 'no', 'less than monthly', 'monthly', 'weekly', and 'daily'.

Natural Capital

Resources

Respondents are asked which natural resources they use from their surroundings. This was an open question.

Amount of Land

Respondents are asked in the survey how much land they, and their family members, own. The variable is measured in Bigha, a Nepalese scale of measurement. 1 Bigha equals 1,67 acre.

Financial Capital

Relative income

In the household identification table the respondents were asked to their, and their family members, monthly income out of labour in NRS. Households were also asked to their monthly received remittances and expenses. The sum of these variables is the relative income of the households.

Savings

This variable is twofold. First respondents are asked how much money they have saved in NRS. This answer is therefore a numerical variable. Further, the respondents were asked if they have enough savings to compensate the low season. This question could be answered with yes and no. No is the reference category in this variable.

Debt

The respondents were asked the following question in the survey: 'How much debt do you have at the moment?'. The variable is indicated in NRS and covers the total amount of debt for the whole household.

Appendix 2, Stakeholders SCNSA

- Ministry of Physical Planning and Works (MoPPW)
- Ministry of Finance (MoF)
- Ministry of Education and Sports (MoES)
- Ministry of Local Development (MoLD)
- Ministry of Women, Children and Social Welfare (MWCSW)
- Ministry of Health and Population (MoHP)
- National Planning Commission (NPC)
- Department of Water Supply and Sewerage (DWSS)
- Department of Health Service (DoHS)
- Department of Education (DoE)
- Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR)
- National Health, Education, Information and Communication Centre (NHEICC)
- Melamchi Water Supply Project (MWSP)
- High Power Committee for Integrated Development of Bagmati Civilization (HPCIDBC)
- Rural Water Supply and Sanitation Fund Development Board (RWSSFDB)
- Kathmandu Upatyaka Khanepani Limited (KUKL)
- Nepal Water Supply Corporation (NWSC)
- United Nations Children's Fund (UNICEF)
- World Health Organization (WHO)
- UN-HABITAT Water for Asian Cities Program Nepal
- The World Bank (WB)
- Asian Development Bank (ADB)
- Nepal Red Cross Society (NRCS)
- Nepal Water for Health (NEWAH)
- National Trachoma Program (NTP)
- National Association of Village Development Committee in Nepal (NAVIN)
- Association of District Development Committee in Nepal (ADDCN)
- Municipality Association in Nepal (MuAN)
- Solid Waste Management and Resource Mobilization Center (SWMRMC)
- Society of Public Health Engineers Nepal (SOPHEN)
- GTZ/Udle
- JMA/JICA
- Helvetas Nepal
- Plan Nepal
- CECI
- USAID
- SNV
- Gurkha Welfare Scheme (GWS)
- Biogas Support Program (BSP)
- Nepal National Teachers' Association (NNTA)
- Nepal National Teachers' Organization (NNTO)
- CARE Nepal
- RVWRMP/FINNIDA
- RWSS-WN/FINNIDA
- SEAM-N
- Water Aid Nepal
- Nepal Scouts
- Federation of Drinking Water and Sanitation Users Nepal (FEDWASUN)

- World Vision
- Eco Himal
- Environment and Public Health Organization (ENPHO)
- LUMANTI
- Media Help Line
- Community Development Forum (CODEF)
- NGO FUWS

Appendix 3, Interviewed Stakeholders

(Inter) national Stakeholders

Name	Organisation
Mr. O. Jones	WSSCC
Mr. G.R. Shrestha	Independent consultant
Mr. H. Panthi	NEWAH
Mr. N.L. Shrestha	Unicef
Ms. N. Mainali	Department of Education
Mr. K. Jaishi	DoLIDAR
Mr. T. Pandit	DWSS

District stakeholders

Bardiya District	Bajura District
<ul style="list-style-type: none"> ▪ District Development Committee ▪ District Water Supply Office ▪ District Educational Office ▪ Municipality Office of Gulariya 	<ul style="list-style-type: none"> ▪ District Development Committee ▪ District Water Supply Office ▪ District Educational Office ▪ Red-Cross Nepal ▪ Finnish Development Cooperation Office

Local stakeholders

Bardiya District	Bajura District
<ul style="list-style-type: none"> ▪ VDC offices in Dhodhari, Sanoshree, Mohamedpur & Mainapokhar ▪ Sub-Health Posts in Dhodhari, Sanoshree, Mohamedpur & Mainapokhar ▪ Several primary and secondary schools in the district 	<ul style="list-style-type: none"> ▪ VDC office of Martadi ▪ District Hospital in Martadi ▪ Sub-Health Post in Kolti ▪ Several primary and secondary schools in Kolti & Martadi

Division of household questionnaires per VDC

Bardiya VDC	Number of questionnaires	Bajura VDC	Number of questionnaires
Dhodhari	14	Dahakot	10
Mainapokhar	12	Gotree	10
Mohamedpur	12	Kolti	10
Sanoshree	12	Martadi	20
<i>Total</i>	<i>50</i>	<i>Total</i>	<i>50</i>

Appendix 4, The Household Questionnaire

Appendix 5, Independent Sample's Test

Independent samples T-test between the Bardiya and Bajura district

		t	df	sig
Human Capital	Educational level head of household	-2,501	91,342	0,014
	Highest educational level household	-3,541	98	0,001
	Nutrition	-2,592	94,829	0,011
	History of waterborne diseases	-2,021	89,281	0,046
	Amount of waterborne diseases	-7,338	49,401	0,000
Physical Capital	Use of safe water	-3,934	49	0,000
	Own latrine	-0,800	98	0,425
	Electricity	0,277	98	0,782
	Internet	-2,021	74,887	0,047
	Mobile phone	1,755	95,637	0,087
	Irrigation	5,130	98	0,000
	Pesticides	7,668	84,483	0,000
	Fertilizer	11,014	88,136	0,000
Social Capital	Reciprocity relationships	8,382	80,824	0,000
	Member of an organisation	6,567	98	0,000
	Commitment to caste	-3,656	81,219	0,000
	Contact outside village	6,764	73,87	0,000
Natural Capital	Amount of resources	-8,107	79,993	0,000
	Amount of land	3,543	57,711	0,001
Financial Capital	Wages	-2,810	57,896	0,007
	Relative income	-1,381	60,283	0,172
	Amount of savings	0,326	98	0,745
	Savings for the low season	4,477	92,434	0,000
	Remittances	0,361	98	0,719
	Debt	1,157	98	0,250
	Amount of expenditures	-2,112	66,725	0,038

$\alpha=0,05$

Appendix 6, Bivariate Analyses

Health as a reason why a latrine is necessary

Human capital

		Educational level head of household			
		None	Primary	≥ Secondary	
Reason latrine	Other	26	25	15	66
	Health	12	11	11	34
		38	36	26	100
Chi-Square	1,089 sig				0,58

		Educational level highest of household			
		None	Primary	≥ Secondary	
Reason latrine	Other	4	39	23	66
	Health	0	15	19	34
		4	54	42	100
Chi-Square	5,356 sig				0,069

		Nutrition		
		None	Yes	
Reason latrine	Other	48	18	66
	Health	18	16	34
		66	34	100
Chi-Square	3,915 sig			0,048
Phi	0,198			

		Sick in last 12 months		
		None	Yes	
Reason latrine	Other	40	26	66
	Health	21	13	34
		61	39	100
Chi-Square	0,013 sig			0,91

		History waterborne diseases		
		None	Yes	
Reason latrine	Other	14	52	66
	Health	6	28	34
		20	80	100
Chi-Square	0,178 sig	0,673		

Amount of waterborne diseases Chi-Square 14,796 sig 0,676

Physical capital

		Use of safe water		
		None	Yes	
Reason latrine	Other	63	3	66
	Health	25	9	34
		88	12	100
Chi-Square	10,215 sig	0,001		
Phi	0,32			

		Having an own latrine		
		None	Yes	
Reason latrine	Other	39	27	66
	Health	17	17	34
		56	44	100
Chi-Square	0,753 sig	0,386		

		Electricity		
		None	Yes	
Reason latrine	Other	11	55	66
	Health	4	30	34
		15	85	100
Chi-Square	0,423 sig	0,515		

		Internet		
		None	Yes	
Reason latrine	Other	65	1	66
	Health	25	9	34
		90	10	100
Chi-Square	15,528 sig	0		
Phi	0,394			

		Mobile phone		
		None	Yes	
Reason latrine	Other	20	46	66
	Health	10	24	34
		30	70	100
Chi-Square	0,008 sig	0,927		

		Irrigation		
		None	Yes	
Reason latrine	Other	29	37	66
	Health	20	14	34
		49	51	100
Chi-Square	1,989 sig	0,158		

		Pesticides		
		None	Yes	
Reason latrine	Other	37	29	66
	Health	23	11	34
		60	40	100
Chi-Square	1,255 sig	0,263		

		Fertilizer		
		None	Yes	
Reason latrine	Other	33	33	66
	Health	22	12	34
		55	45	100
Chi-Square	1,961 sig	0,161		

Social capital

		Reciprocity relationships				
		no	helped	giving	both	
Reason latrine	Other	31	4	7	24	66
	Health	20	1	3	10	34
		51	5	10	34	100
Chi-Square	1,445 sig	0,695				

		Member of an official group/organisation			
		no	inactive	active	
Reason latrine	Other	32	1	33	66
	Health	18	0	16	34
		50	1	49	100
Chi-Square	0,644 sig				0,725

		Commitment to own caste		
		no	yes	
Reason latrine	Other	18	48	66
	Health	7	27	34
		25	75	100
Chi-Square	0,535 sig			0,465

		Contacts outside village					
		Less than		Monthly	Weekly	Daily	
		Never	monthly				
Reason latrine	Other	19	2	12	18	15	66
	Health	14	0	1	9	10	34
		33	2	13	24	24	100
Chi-Square	6,49 sig				0,165		

Natural capital

Amount of resources used	Chi-Square	6,925 sig.	0,14
Amount of land	ssb	3,242 f	0,798
	ssw	398,538 sig	0,374

Financial capital

Wages	ssb	1320000000 f	3,137
	ssw	41240000000 sig	0,08
Relative income	ssb	20,273 f	1,051
	ssw	2,167 sig	0,509
Saving	ssb	0,2 f	0,91
	ssq	21,56 sig	0,342

		Savings lowseason enough			
		no	yes		
Reason latrine	Other		27	39	66
	Health		11	23	34
			38	62	100
Chi-Square		0,697	sig	0,404	
Remittances	ssb	2500004,456	f		0,054
	ssw	4523000000	sig		0,816
Debt	ssb	4,035E+11	f		2,118
	ssw	1,867E+13	sig		0,149
Expenditures	ssb	83340000	f		0,423
	ssw	19300000000	sig		0,517

Health as a reason why sewerage is necessary

Human capital

		Educational level head of household			
		None	Primary	≥ Secondary	
Reason sewerage	Other	27	19	18	64
	Health	11	17	8	36
		38	36	26	100
Chi-Square		3,097	sig	0,213	

		Educational level highest of household			
		None	Primary	≥ Secondary	
Reason sewerage	Other	3	33	28	64
	Health	1	21	14	36
		4	54	42	100
Chi-Square		0,535	sig	0,765	

		Nutrition		
		None	Yes	
Reason sewerage	Other	41	23	64
	Health	25	11	36
		66	34	100
Chi-Square		0,297	sig	0,586

		Sick in last 12 months		
		None	Yes	
Reason sewerage	Other	40	24	64
	Health	21	15	36
		61	39	100
Chi-Square		0,168	sig	0,682

		History waterborne diseases		
		None	Yes	
Reason sewerage	Other	16	48	64
	Health	4	32	36
		20	80	100
Chi-Square		2,778	sig	0,096

Amount of waterborne diseases	Chi-Square	19,869	sig	0,34
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Physical capital

		Use of safe water		
		None	Yes	
Reason sewerage	Other	56	8	64
	Health	32	4	36
		88	12	
Chi-Square	0,042 sig	0,837		

		Having an own latrine		
		None	Yes	
Reason sewerage	Other	37	27	64
	Health	19	17	36
		56	44	
Chi-Square	0,237 sig	0,626		

		Electricity		
		None	Yes	
Reason sewerage	Other	12	52	64
	Health	3	33	36
		15	85	
Chi-Square	1,961 sig	0,161		

		Internet		
		None	Yes	
Reason sewerage	Other	59	5	64
	Health	31	5	36
		90	10	
Chi-Square	0,945 sig	0,331		

		Mobile phone		
		None	Yes	
Reason sewerage	Other	26	38	64
	Health	4	32	36
		30	70	
Chi-Square	9,557 sig	0,002		
Phi	0,309			

		Irrigation		
		None	Yes	
Reason sewerage	Other	37	27	64
	Health	12	24	36
		49	51	
Chi-Square	5,525 sig	0,019		
Phi	0,235			

		Pesticides		
		None	Yes	
Reason sewerage	Other	40	24	64
	Health	20	16	36
		60	40	
Chi-Square	0,463 sig	0,496		

		Fertilizer		
		None	Yes	
Reason sewerage	Other	40	24	64
	Health	15	21	36
		55	45	
Chi-Square	4,04 sig	0,044		
Phi	0,201			

Social capital

		Reciprocity relationships					
		no	helped	giving	both		
Reason sewerage	Other	36		4	7	17	64
	Health	15		1	3	17	36
		51		5	10	34	
Chi-Square	4,565 sig	0,207					

		Member of an official group/organisation				
		no	inactive	active		
Reason sewerage	Other	33		1	30	64
	Health	17		0	19	36
		50		1	49	
Chi-Square	0,813 sig	0,666				

		Commitment to own caste		
		no	yes	
Reason sewerage	Other	18	46	64
	Health	7	29	36
		25	75	
Chi-Square		0,926 sig		0,336

		Contacts outside village						
		Less than			Monthly	Weekly	Daily	
		Never	monthly					
Reason sewerage	Other	26		2	9	14	13	64
	Health	7		0	4	13	12	36
		33		2	13	27	25	
Chi-Square		7,703 sig						0,103

Natural capital

Amount of resources used		Chi-Square	3,032 sig.	0,552
Amount of land	ssb		6,654 f	1,421
	ssw		16,386 sig	0,132

Financial capital

Wages	ssb	11,057 f	1,202
	ssw	11,983 sig	0,257
Relative income	ssb	21,123 f	1,238
	ssw	1,917 sig	0,378
Saving	ssb	3,769 f	0,88
	ssq	19,271 sig	0,603

		Savings lowseason enough		
		no	yes	
Reason sewerage	Other	29	35	64
	Health	9	27	36
		38	62	
Chi-Square		4,035 sig		0,045
Phi		0,201		

Remittances	ssb	4,887 f	1,635
	ssw	18,153 sig	0,086
<hr/>			
Debt	ssb	7,314 f	1,02
	ssw	15,726 sig	0,459
<hr/>			
Expenditures	ssb	21,04 f	0,8
	ssw	2 sig	0,716
<hr/>			

Washing hands with soap

Human capital

		Educational level head of household			
		None	Primary	≥ Secondary	
Wash hands	Other	21	9	12	42
	Soap	17	27	14	58
		38	36	26	
Chi-Square	7,199 sig	0,027			
Cramer's V	0,268				

		Educational level highest of household			
		None	Primary	≥ Secondary	
Wash hands	Other	3	21	18	42
	Soap	1	33	24	58
		4	54	42	
Chi-Square	2,015 sig	0,365			

		Nutrition		
		None	Yes	
Wash hands	Other	27	15	42
	Soap	39	19	58
		66	34	
Chi-Square	0,095 sig	0,758		

		Sick in last 12 months		
		None	Yes	
Wash hands	Other	26	16	42
	Soap	35	23	58
		61	39	
Chi-Square	0,025 sig	0,875		

		History waterborne diseases		
		None	Yes	
Wash hands	Other	7	35	42
	Soap	13	45	58
		20	80	
Chi-Square	0,503 sig	0,478		

Amount of waterborne diseases	Chi-Square	43,549 sig	0,001
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Physical capital

		Use of safe water		
		None	Yes	
Wash hands	Other	37	5	42
	Soap	51	7	58
		88	12	
Chi-Square	0,001 sig	0,98		

		Having an own latrine		
		None	Yes	
Wash hands	Other	28	14	42
	Soap	28	30	58
		56	44	
Chi-Square	3,344 sig	0,067		

		Electricity		
		None	Yes	
Wash hands	Other	10	32	42
	Soap	5	53	58
		15	85	
Chi-Square	4,408 sig	0,036		
Phi	0,21			

		Internet		
		None	Yes	
Wash hands	Other	39	3	42
	Soap	51	7	58
		90	10	
Chi-Square	0,657 sig	0,418		

		Mobile phone		
		None	Yes	
Wash hands	Other	20	22	42
	Soap	10	48	58
		30	70	
Chi-Square	10,705 sig	0,001		
Phi	0,327			

		Irrigation			
		None	Yes		
Wash hands	Other	29	13	42	
	Soap	20	38	58	
		49	51		
Chi-Square	11,646	sig	0,001		
Phi	0,341				

		Pesticides			
		None	Yes		
Wash hands	Other	37	5	42	
	Soap	23	35	58	
		60	40		
Chi-Square	23,816	sig	0		
Phi	0,488				

		Fertilizer			
		None	Yes		
Wash hands	Other	35	7	42	
	Soap	20	38	58	
		55	45		
Chi-Square	23,488	sig	0		
Phi	0,485				

Social capital

		Reciprocity relationships				
		no	helped	giving	both	
Wash hands	Other	35	2	2	4	42
	Soap	17	5	8	30	58
		51	5	10	34	
Chi-Square	27,493	sig	0			
Cramer's V	0,524					

		Member of an official group/organisation			
		no	inactive	active	
Wash hands	Other	35	0	7	42
	Soap	15	1	42	58
		50	1	49	
Chi-Square	32,266	sig	0		
Cramer's V	0,568				

		Commitment to own caste		
		no	yes	
Wash hands	Other	6	36	42
	Soap	19	39	58
		25	75	
Chi-Square	4,433 sig	0,035		
Phi	-0,211			

		Contacts outside village					
		Less than		Monthly	Weekly	Daily	
		Never	monthly				
Wash hands	Other	31	1	1	7	2	42
	Soap	2	1	12	20	23	58
		33	2	13	27	25	
Chi-Square	57,607 sig	0					
Cramer's V	0,759						

Natural capital

Amount of resources used	Chi-Square	18,107 sig.	0,001
	Cramer's V	0,426	
Amount of land	ssb	5,879 f	1,113
	ssw	18,481 sig	0,352

Financial capital

Wages	ssb	11,057 f	1,202
	ssw	11,983 sig	0,257
Relative income	ssb	22,946 f	1,82
	ssw	1,417 sig	0,15
Saving	ssb	3,769 f	0,88
	ssq	19,271 sig	0,603

		Savings lowseason enough		
		no	yes	
Wash hands	Other	29	13	42
	Soap	9	49	58
		38	62	
Chi-Square	29,628 sig	0		
Phi	0,544			

Remittances	ssb	4,887 f	1,635
	ssw	18,153 sig	0,086
<hr/>			
Debt	ssb	0,7314 f	1,02
	ssw	15,726 sig	0,459
<hr/>			
Expenditures	ssb	21,04 f	0,8
	ssw	2 sig	0,716
<hr/>			