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# **Local Livelihoods and the Bujagali Hydro-Power Dam, Uganda**

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*“Kiyira bwe buggaga”*

*(Lusoga for “The Nile is Wealth”)*

*Bujagali Falls*



## Abstract

Previous experience with dams shows that the local population carry a high proportion of the burden related to such projects. This paper intends to investigate the risks of impoverishment among the project-affected people in the resettled and downstream settlements who are in the fishing or agriculture sectors.

Earlier empirical research provided the paper with a framework to build the data collection and to analyse the findings together with the following two models: The Impoverishment Risks and Reconstruction model and the Sustainable Livelihoods approach. The first one provided the research with concrete indicators of impoverishment, namely landlessness, joblessness, food security and marginalisation. The latter further expanded the framework by allowing a broad analysis incorporating several elements which constitute a livelihood situation as well as affecting the method used in the research. The data collection is mainly based on interviews with complementary case studies.

The analysis found that the resettled population have experienced a relatively high degree of impoverishment, and that it is mainly caused by the adverse effects on the status of their assets. The compensation they received has not been able to restore or improve their livelihoods and the site for the resettlement offers few possibilities for the resettled to counteract the impoverishment. The population is experiencing isolation, both geographically and regarding the ability to affect their own livelihoods. The downstream settlements face a moderate risk of impoverishment by the dam. The potential adverse effects on the fisheries and a lack of access to uncontaminated water are the main effects of the dam constituting this risk. However, the research suggests that impoverishment can be reversed, mainly by expanding the options of the project-affected people by crating opportunities for alternative livelihood activities. Measurements can also be taken to ensure the access to basic needs, especially water and health care.

This paper has used the Sustainable Livelihoods Framework for further investigation of the context in which the impoverishment in the resettled area and the risk of impoverishment in the downstream are prevalent. The framework presents three components; vulnerability context, transforming structures, processes and assets which all contribute to the livelihood strategies and outcome of the project-affected people. The relationship between these proves to be dynamic and complex. These components do not create favourable livelihood outcome for the project-affected people, as they only display limited possibilities to counteract the adverse impacts of the dam. However, these components enabled this paper to identify the most important factors that influence livelihood outcomes. This will make it easier to find proper measurements to counteract the adverse impacts.

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**I hereby declare that the thesis: “Local Livelihoods and the Bujagali Hydro-Power Dam, Uganda” has not been submitted to any other universities than Agder University College for any type of academic degree.**

*Oslo 21.6.2007*

**Karianne Hansen Heien**

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## **Glossary**

AESNP	AES Nile Power
DFID	Department for International Development
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
IRN	International Rivers Network
IRR	Impoverishment Risks and Reconstruction Model
MRF	Minimum Residual Flow
NAPE	National Association of Professional Environmentalists
OED	Operation Evaluation Department of the World Bank
PEAP	Poverty Eradication Action Plan
R.J. BIL	R.J. Burnside International Limited
SEA	Social and Environmental Assessment
SL	Sustainable Livelihoods Approach
WCD	World Commission on Dams

## **Chapter 1 Introduction**

In many parts of the world, increased energy production is regarded as one of the most important factors in facilitating development. Without energy, industry can not evolve, employment rates will stay low, economic development will not occur, all of which can have an impact on other areas of development. But increased energy production is often also made at the expense of important factors in a developmental perspective, such as the environment, socio-economy, sustainability and culture, and thereby also on affected people's general livelihood. For the decision-makers and those implementing an energy project, a choice concerning increased energy production through hydropower dams is often a choice where opposing interests have to be considered and priorities have to be made. The Bujagali Hydro-Power Dam in Uganda represents such a project, where both positive and negative effects are expected, and where the implementation is a question of priorities and goals.

### **1.1 Rationale**

There are about 45000 large dams in the world today, and considering the costs and importance of such constructions their amount of attention is well justified. The World Commission on Dams (WCD) was initiated in order to investigate the effects of dams and released its report in 2000, stating that "*dams fundamentally alter rivers and the use of a natural resource, frequently entailing a reallocation of benefits from local riparian users to new groups of beneficiaries at a regional or national level*" (WCD 2000). The report spurred an extensive amount of research and literature which has been able to shed light and concretise important aspects of dams. It also points out how dams have required "*an unacceptable and often unnecessary price*" paid by displaced people and downstream settlements (WCD 2000:xxviii). Thayer Scudder has in an in depth-study of 50 dams recognised impoverishment as the major livelihood outcome among resettled populations (Scudder n.d.:1) and Chris de Wet, whose research has contributed to the WCD report, points to "*severe socio-economic hardship*" for resettled populations (de Wet n.d.:1). William Adams claimed in his contribution to the WCD report that downstream impacts of dams are not well understood and that dams seems to especially impact downstream communities in the fishing and agricultural sector in channels, floodplains and delta/inshore marine environments (Adams 2000:1). Despite the extensive research on dams, each dam can have different impacts on local livelihoods, both because the dam itself and its surroundings are different from project to project and because the livelihood situation of the locals can be highly diverse from other similar situations. It is therefore necessary to establish the livelihood situation of the locals in order to assess the actual impacts of the Bujagali Hydro-Power Dam.

### **1.2 Aims, Objectives and Research Questions**

The purpose of this study is to investigate the environmental effects of the Bujagali Hydro-Power Dam and how these impact local livelihoods in terms of impoverishment. The targeted livelihoods are those in the agriculture and fishing sector residing in the resettled and downstream communities, as subsistence farming and fishing are important sources of livelihood assets in Uganda and in the project-affected area (Mugenyi, Tumushabe and Waldman 2005:3; Mugenyi, Tumushabe and Waldman 2005:36; AES Nile Power (AESNP) 2001:93). The focus on downstream communities is based on the negligence these

communities seem to have been subjected to in many similar projects. The downstream impacts are often not taken into consideration and the affected people are not included in plans for livelihood restoration and improvement (WCD 2000:113). The resettled communities will be investigated because of the severity of the negative impacts which have been reported in many similar projects and because of the lack of livelihood restoration and improvement which seem to accompany resettlement.

The paper aims to investigate how the project may, and already have, adversely affect the project-affected people in terms of impoverishment and draws upon earlier research to establish the correlation between these types of projects and the risks of impoverishment. To contextualise the correlation it seeks to extract relevant information about the predicted impacts of the Bujagali Hydro-Power Dam. The paper uses four components from Cernea's Impoverishment Risks and Reconstruction Model (IRR) as indicators of poverty and the Sustainable Livelihoods approach (SL) as a framework for both method and for analysing the livelihood situations.

The research will be guided by the following research questions:

- Will the dam create environmental effects which will impact the natural resource base for agriculture and fishing?
- Do these effects constitute risks of impoverishment through landlessness, joblessness, food insecurity and marginalisation among the resettled and downstream settlements?
- How do external and internal factors in a livelihood situation contribute to create and reinforce the impacts on the local livelihoods?

### **1.3 Motivation for Choice of Topic**

The personal motivation for doing a thesis on this topic came after a short visit to Uganda and the Bujagali Falls in March 2006, where my thoughts started wandering on the implications of the projects on the local environment. The visit led to conversations with some of the locals, who expressed concern about their future. They expected the environment to change and deteriorate. Many of the locals are dependent on the environment for sustaining their livelihoods; in sectors like tourism, fishing and agriculture. They were afraid that they would lose their jobs or other sources of income and since they had few alternatives of livelihood sustainability, they would thereby experience a great negative impact on their livelihood. My concern for the environmental aspects of the dam was therefore accompanied with the local's worry about the future prospects for livelihood maintenance and how the environmental impacts of the dam will affect the local's livelihood situation.

Cernea, which has investigated the impacts of hydro power dams and forced relocation and created the IRR model which will be presented in chapter five, points to the *trade-offs* in impacts, where the negative impacts are outsized by the positive ones (Cernea 2004:4). A motivation behind this thesis is to increase the knowledge-base of the implications of the project, both for the locals and the initiators and provide groundwork for future research on the community. In addition, it aims to shed light on whether there is a need for measurement directed at the local community for sustaining their livelihoods after the dam had been built.

## **1.4 Project Description**

The Bujagali Falls is a famous waterfall in the River Nile near Jinja in the south-east of Uganda, which will be incorporated in the coming 250 Megawatt Bujagali Hydro-Power Dam. The hydropower facility itself will be located 8 kilometres downstream of the Nalubaale/Kiira dams (previously known as the Owen Falls/Owen Extension Falls), at Dumbbell Island. The dam will be sponsored through a partnership between SG Bujagali Holdings Ltd (Sithe Global Power, LCC) and IPS Limited (Aga Khan Fund for Economic Development): The Bujagali Energy Limited. The background is that Uganda is experiencing a power-crisis. Only between 3-5 % (International Finance Corporation 2001; Pottinger 2000) of the country's inhabitants are connected to the power-grid. In addition, the water level in Lake Victoria has lowered drastically, so the country's only dam at this point, Nalubaale/Kiira dam, is producing less power than before. The government in Uganda has decided to increase the power-production in order to give more people access to power. The government has initiated several different dam-projects, with Bujagali being the biggest and perhaps also the most controversial. The dam-project has, after being put on hold because the lead investors and constructors pulled out some years back, been resurrected with new investors and constructors. Construction is said to be initiated in 2007. The final approval is still pending, but the importance of the project as expressed by the country's president; "*Only hydroelectricity via huge dams, with Bujagali Dam coming first! No hydroelectricity from Bujagali Dam will mean no foreign investment and, therefore, no development for Uganda*" (International Rivers Network (IRN) (2000). The fact that a new company has been allowed to continue the project, points in a direction of approval. In addition, on April 27, the project was granted a loan from the World Bank, providing another sign of approval from the government of Uganda.

## **1.5 Thesis Outline**

The second chapter of the thesis will give a general overview of Uganda and the project-affected area, with emphasis on the form of governance, economy, poverty and employment trends, in addition to relevant facts about the Victoria Nile. Chapter three presents earlier empirical research on both the environmental effects of dams and how the local livelihoods have been affected. This chapter will concentrate on the environmental effects which are relevant for the local livelihoods and which are possible for me as a researcher to investigate and it focuses on the effects on the resettled and downstream communities. It is concentrated on findings from developing countries. The fourth chapter presents the potential environmental effects of the Bujagali dam and their impact on the project-affected people. These effects are established on the background of the findings from the previous empirical research in chapter three as well as the assessment report provided for this project. The two models which constitute the framework for both data-collection and analysis are presented in chapter five. Cernea's IRR model, which has laid the foundation for the type of data that has been gathered and provides indicators of poverty. The SL approach has both been important for the data collection, the methodology and methods that have been used for the data collection and how the data material is analysed. This chapter also presents the propositions on the likely effects of the dam, which will also lay the foundation of the structure of the findings in chapter seven. These models and the findings from previous empirical research constitute the theoretical framework. Chapter six presents the methodology and methods used for data collection and analysis, the sample population and the challenges encountered during the research. In relation to this, it also presents some of the key issues regarding the validity

and reliability of the research. Chapter seven presents the empirical findings according to the propositions presented chapter three, and is concluded on the basis of the four components from the IRR model. The chapter has been divided into two parts, one presenting the findings from the Naminya resettlement village, the other data from the downstream settlements. Chapter eight discusses the main findings from chapter six according to the Sustainable Livelihoods approach and aims to explain the livelihood outcome according to the components presented in the Sustainable Livelihoods Framework. The objective is to investigate how the dynamic relationship between the components constitutes the livelihood outcome of the local livelihoods. The ninth chapter provides concluding remarks and summarises the main findings in the research, discusses the validity and reliability of this research as well as providing some recommendations for improvement based on these findings.

## **Chapter 2 Area of Study**

### **2.1 Uganda Background Information**



Uganda is situated in the “middle” of Africa, it is landlocked and a part of East Africa. It is a former British colony and its modern history has been influenced by wars and conflicts, especially in the era of Idi Amin and Milton Obote. The current president is Yoweri Museveni from the National Resistance Movement, who has been in office since 1986. In northern Uganda an ongoing conflict between the government and Lord’s Resistance Army has led to what lately has been labelled one of the “forgotten disasters” in the world. The conflict has resulted in millions living in refugee-camps and that the production in the north is low.

Despite the country’s turn to a democratic rule, there is insecurity about the actual level of democracy, especially in terms of election-rigging. Uganda is also a heavily corrupted country (Thue, Makubuya and Nakirunda 2002:18). Accountability is regarded as low and the voice of the civil society is limited (Thue, Makubuya and Nakirunda 2002:6). The country has been a major receiver of aid for a long time, constituting approximately 48% of the national budget (Mugenyi, Tumushabe and Waldman 2005:3), but the country has experienced economic growth over the last years. The average economic growth has been 6, 5 % pr. year over the last ten years, with the fastest growing sectors being construction, mining, quarrying, manufacturing, transport, communication and services (Mugenyi, Tumushabe and Waldman 2005:3).

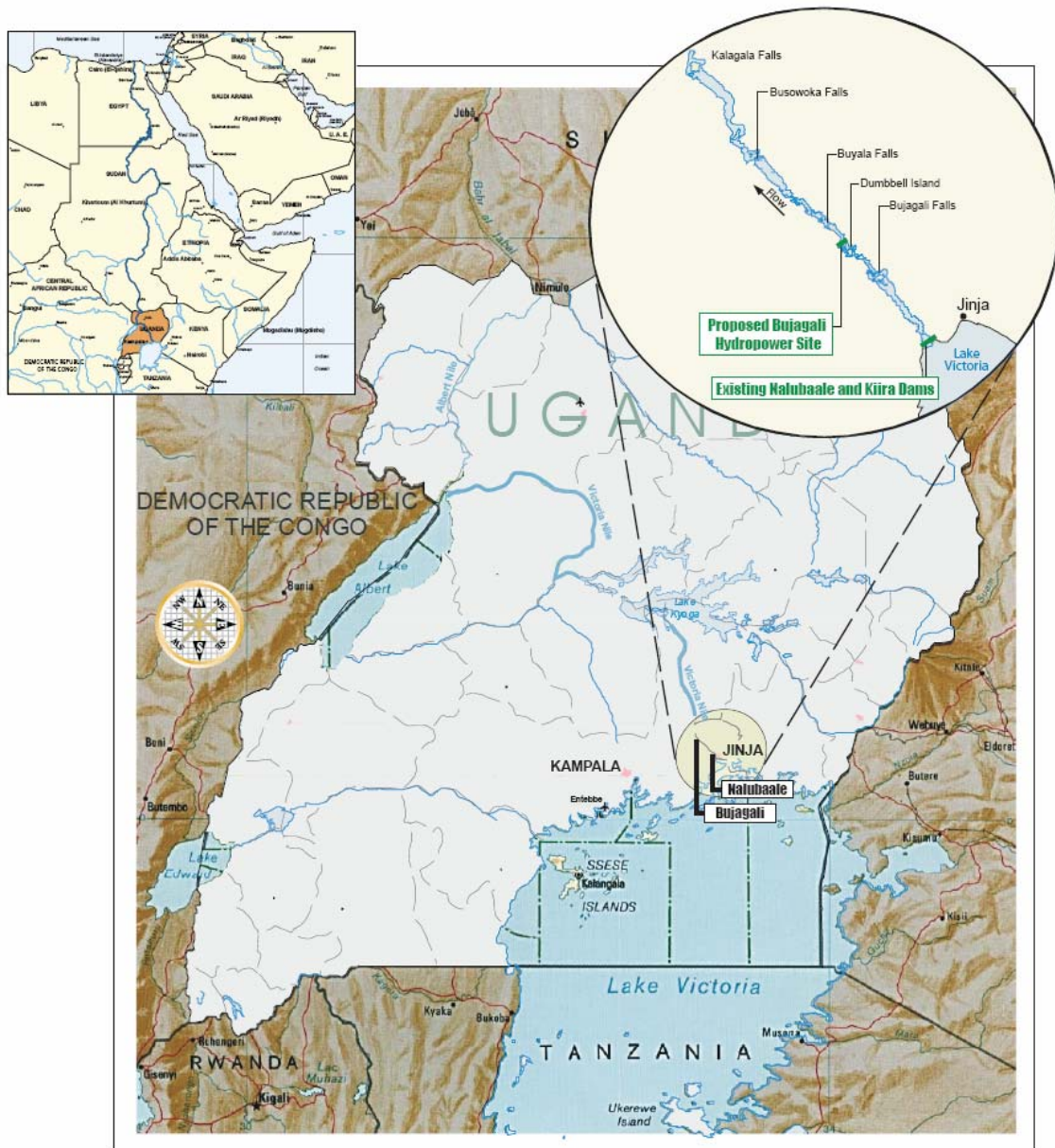
The country has a population of 28, 8 millions with a growth rate of 3, 5% a year (World Bank 2006a). Poverty has declined from 56% of the population in 1992 to 38% in 2003, but the level of poverty is still high in the north and in the east, where Bujagali Falls is situated (World Bank 2006b) and 25% of the population lives on less than a dollar a day (Poverty Reduction and Economic Management 2006:1). However, there has also been reported an increase in the amount of poor between 1999/2000 and 2002/03, despite economic growth, falling prices on food and an increase in asset holdings (Poverty Reduction and Economic Management 2006:65). The poorest people tend to be agriculturalists (Poverty Reduction and Economic Management 2006:19). Only about 5% of the population has access to electricity through the power grid (Pottinger 2000). The Bujagali Hydro-Power dam is stated to be one of the measures for eradicating poverty through increased access to energy.

The move from the agricultural sector to other sectors is likely to be one reason for the drop in the amount of people living in poverty, because the new sectors offer better income. Personal consumption and income increased between 1997/98 and 1999/2000, while it fell after 2000 (Poverty Reduction and Economic Management 2006:4). Employment trends show that the employment rate has declined in agriculture and increased in the industry-and service sectors. Both non-agricultural self-employment and the private formal sector have generated jobs, and the formal sector has grown more than the informal sector (Poverty Reduction and Economic

Management 2006:ii). The decline in poverty is to some extent characterised by an increase in inequality, which makes it more difficult for those still poor to increase their income (Poverty Reduction and Economic Management 2006:iii). The inequality is visible both between and within rural and urban areas (Poverty Reduction and Economic Management 2006:5). The country is undergoing a process of decreasing poverty, partly through the *Poverty Eradication Action Plan* (PEAP). In the first PEAP published in 1997, poverty was defined as lack of access to basic necessities, this was in 1998 extended to also include lack of employment, survival opportunities, powerlessness, social exclusion, ignorance, lack of knowledge and material resources (Mukasa and Masiga 2003:2). This plan aims at eradicating poverty through economic management, enhancing production, competitiveness and incomes, security conflict resolution and disaster management, good governance and human development (World Bank 2006b). The practical approach to the PEAP is to increase government spending in areas such as education, health care, water, sanitation and justice, law and order (Poverty Reduction and Economic Management 2006:41).

Over 90% of Uganda's Gross Domestic Product (GDP) stems from the use of natural resources, especially forestry and agriculture (Mugenyi, Tumushabe and Waldman 2005:ix), in which agriculture constitute 43% of the GDP and 80% of the employment (Mugenyi, Tumushabe and Waldman 2005:3). About 300 000 people is reported to be employed in fishing and about 1,7 million people say they derive their income from fishing (Mugenyi, Tumushabe and Waldman 2005:36). It also earned Uganda US\$ 45 million in export in 1996 (Mugenyi, Tumushabe and Waldman 2005:36). The environment and the natural resources are viewed as one of the main foundations for achieving economic growth and reduction of poverty (Mugenyi, Tumushabe and Waldman 2005:7). Despite this, the agrarian economy of Uganda is characterised by a low level of diversification, environmental degradation and low incomes (Butler and Mazur 2004:1).





Map 2.1: Map of Uganda and localisation of the Bujagali Hydro-Power Dam

## **2.2 Mukono District**



### *Buganda Kingdom*

The area surrounding the Bujagali Falls is divided into two different administrative districts: Jinja east of the river and Mukono west of the river, with a combined population of 1,172,965 (2002) and a population growth rate of 2.5% and 2.6% respectively (R.J. Burnside International Limited (BIL) 2006:116). The Eastern bank of the river is dominated by the Busoga tribe, while the Western bank is dominated by the Buganda tribe. The districts are further divided into counties, sub-counties, parishes and villages. Jinja is one of the biggest cities in Uganda and has developed to become an industrial centre in the country, although the economy has been somewhat on the decrease the last decades due to political instability. Increased population has in the last two decades put pressure on the land, and most of the area is now cultivated, with little forest left (AESNP 2001:91). In the Jinja district 43% of the affected population is primarily involved in the agricultural sector and in Mukono it is 53% (R.J. BIL 2006:117), and respectively 37% and 57% are in subsistence farming (AESNP 2001:93a). In the project-affected area 46% is in the agricultural sector (R.J. BIL 2006:117). Most people are involved in farming, but the majority are in sectors of trade/business, fishing and bicycle taxi driving (R.J. BIL 2006:134). The annual average income per individual from agricultural activities is US\$ 270, which is somewhat above the national average and the annual income per household is US 2300\$ (R.J. BIL 2006:134). Agriculture is labour intensive and based on intercropping, both for self-subsistence and commercial purposes. The main subsistence food crops are bananas, cassava, sweet potatoes, maize, beans, groundnuts, cocoyam, millet, sorghum, simsim and yams. The main food crops for commercial purposes are coffee, sugar and some vanilla (R.J. BIL 2006:54). The agricultural plots are increasingly being divided into smaller plots of unsustainable sizes because of the anticipation of compensation from the hydropower project. The average size of land in the area is 0,8 ha, and according to a study performed in the area, land plots on less than 0,5 ha is not sustainable both in terms of livelihood and the environment (R.J. BIL 2006:137). The area can be classified as relatively poor, with 36% and 20% classified as poor and very poor and only 6% as rich and 38% as not-so-poor (R.J. BIL 2006:135). These figures are based on indicators concerning living standard, children in school, health situation, family situation, land ownership and material wealth.

In the project affected area, 4% of the population is involved in fishing (AESNP 2001:93). Fish is an important source of nutrition and it is an important source of income for the poor, as well as being vital in poverty eradication (R.J. BIL 2006:138). The River Nile only constitute 1, 1 % of the annual fish catch in Uganda, and the river is mainly used for fishing for self-consumption. (R.J. BIL 2006:139). The Upper Victoria Nile (the upper 65 kilometres of the Victoria Nile) fishing sector employs 150-200 full time jobs, and had an earning of between US\$2680- US\$7106 in 2000, and most fishing is for commercial purposes (R.J. BIL 2006:141). The average fishing income is US\$ 350 per individual (R.J. BIL 2006:134).

### **2.3 The Victoria Nile**

The River Nile originates in Lake Victoria and passes through Uganda, Sudan and Egypt before it eventually reaches the Mediterranean. In the project area, the river is between 200 and 600 meters wide with a drop of about 20 meters in the rapids. The area along the river-plateau is dominated by agricultural plots and intercropping of timber and fruit trees. The riverbed is characterised by big rocks (R.J. BIL 2006:57). Fishing is mainly located on the eastern bank (AESNP 2001:35). The most important fish species for commercial and consumption are the tilapia species (R.J. BIL 2006:93). The aquatic flora in the river includes phytoplankton (R.J BIL 2006:87), macrophytes (R.J BIL 2006:90), and micro-invertebrates (R.J BIL 2006:91). Phytoplankton serves its importance through being food for zooplankton (micro-invertebrate) and juvenile fishes. Macro-invertebrates also serve a role in the food-webs of the ecosystem in the river, among other by being a vital source of food for fish (R.J. BIL 2006:91).

## **Chapter 3 Empirical Background**

### **3.1 Empirical Background on Environmental Effects**

It is important to emphasise that despite some similarities of the effects that seem to be prevalent in dam-projects, the effects are still dependent on the specific characteristics of each dam (WCD 2000:103). First of all, dams are built for different reasons, like power generation through hydropower dams or for improvement in agriculture through irrigation dams. One dam can also serve several purposes. Different types of dams can have different impacts on the environment, and therefore also on livelihoods. The size of the dam and the impoundment can also create different impacts. Second, the location of a dam will have different characteristics and can therefore contribute to further location-specific impacts of the dam. Third, the environmental impacts of the dam will affect livelihoods in different ways, depending on the characteristics of the project-affected people. The livelihoods are dependent on the dynamic between a myriad of factors, some of which are culture, policies, employment, source of income, social interaction, kinship, etc. These factors may both enhance and reduce negative impacts and impact the way that project-affected people are affected and react to changes in their livelihoods following construction. The empirical background must therefore be treated as a generalisation and not necessarily location-specific.

In November 2000, the World Commission on Dams released a report called *Dams and Development. A New Framework for Decision-Making*. Its main objective was to review the development effectiveness of dams, assess alternatives and to create new standards, guidelines and criteria that would be internationally accepted for the future of dams. The commission was a result of a meeting supported by the World Bank and The World Conservation Union in 1997, designated to discuss the role of large dams in development. According to the WCD, the most visible and obvious environmental impact of dams is the physical alteration, through fragmentation and transformation of rivers (WCD 2000:15). The impact on the physical environment especially concerns the impoundment, which will draw on the surrounding areas and leave areas not previously inundated flooded. In addition to infrastructure projects, which often are a major part of hydropower projects, this is often the main reason for resettlement. People who are directly affected by the construction of the dam will have to be relocated in new areas. In addition to the easily visible environmental effect of dams, there are others which are less direct. The report points to first-order impacts of dams, including alteration of the natural distribution and timing of the flow of water, second order effects which change the primary biological productivity in the river's ecosystem and third order effects on which can cause changes to the fauna, like the fish-population and plankton (WCD 2000:74). IRN points to other environmental effects of dams: Flooded habitats, isolation of animals and blocking of migration routes (IRN 2003a:2).

More specifically, dams have in some cases led to a total loss of certain species (WCD 2000:74). The dynamics of a river is driven by the flood-regime, and the flora and fauna downstream are dependent on the duration, timing and frequency of the flood-regime (WCD 2000:78). Hydropower dams especially disrupt the natural flood-regime of a river (WCD 2000:78). A natural river flow brings sediments and nutrients down the river, which is hindered by a dam. A decrease in the transportation of sediments and nutrition downstream can cause the loss of habitat for animal species, like fish (WCD 2000:81). In addition to altering the habitats that are sustained by the natural-flood regime, it also creates an

environment which promotes new species of fish, plants, plants and animals which are non-native in the area (WCD 2000:80) while disrupting the migratory patterns of indigenous species (WCD 2000:82).

One contribution to the report from the WCD was the report *The Downstream Impacts of Large Dams* by William Adams. This report shows that downstream impacts can occur far from the location of the dam, and are therefore often not taken into consideration by the planners (Adams 2000:8; WCD 2000:113). Adams first of all emphasises the importance of the flow patterns of the river, and the potential effects on river and floodplains environments, which are dependent on the river's flood-regime (Adams 2000:7). The Cahora Bassa Dam in the Lower Zambezi River in Mozambique, completed in 1974, provides a concrete example of environmental impacts of a hydropower dam. The communities along the river are dependent on agriculture, fishing and other natural resources for maintaining their livelihood and the agriculture is based on flood-recession practices (Scodanibbio and Mañes 2005:977). The dam has led to a decline in natural resources and affected the users of the river, both farmers and fishermen (Scodanibbio and Mañes 2005:977). A great part of the changes is a result of the changed flood-regime caused by the dam. For the farmers, erosion, reduced soil fertility and less seasonal flooding has led to cultivation in other areas on higher grounds. Food security is at risk, even to the extent that the people rely on food aid programmes (Scodanibbio and Mañes 2005:978). As for fishing, the spawning grounds have been reduced because of change in the flood-regime, less nutrition for fish and decreased subsistence fishing. Spawn fishing, which in Mozambique employs 100 000 people for subsistence only, has experienced a 50% decrease since the 1970's at the Sofala Bank (Scodanibbio and Mañes 2005:978). Similarly, after constructing the Nam Song Diversion Dam in Laos, over 1000 families experienced a decline in fisheries in addition to losing their fishing boats and nets (IRN 2003b:2), and after the Nam Leuk Hydropower Project was built, people experienced a decline in fish catch from the previous 2-4 kilograms a day to less than one kilogram a day. In addition to affecting their possibilities for earning money by selling fish, it has affected their food-security (IRN 2003b:3).

### **3.2 Environmental Impacts on Local Livelihoods**

Several post-impact assessments of dams on local livelihoods have been conducted and the section below will give an overview of the main findings from some of these: The general impacts, impacts on the resettled and impacts on the downstream communities. The findings are both from general assessments and dam-specific assessments.

The WCD's final report describes the wide-ranging negative impacts of dams on the local communities which are dependent on the river and the surroundings both for their economies and culture (WCD 2000:102). Changes in flood-regime are one of the main effects from dams and these changes have reportedly affected both floodplain agriculture and fisheries in Africa (WCD 2000:83). The flooding of land and changes in the river's ecosystem can cause a decrease of the access affected people have to traditional sources of livelihood, including agricultural plots and fishing. Some project-affected people are compensated through various means, but some are not to be entitled to any compensation. These are often people in the downstream communities, those without a legal title to the land they use or those without land at all, indigenous people and those affected by the construction of infrastructure (WCD 2000:105). For those who are subjected to resettlement, the impacts of losing access to

natural resources is quite immediate, before and during the construction and inundation, while the downstream impacts are often not noticeable until after the dam is completed.

### **3.2.1 Resettlement**

Some project-affected people are affected in such a way that they have to be resettled, and are labelled Physically Displaced People. They are usually considered eligible for compensation and all have the common trait that they are relocated from their original settlement site. More than 400 000 people have been resettled in Africa because of dam construction (de Wet n.d:5).

Through a general review of dams and displacement in India, Hemadri, Mander and Nagaraj (1999) found some tendencies regarding rehabilitation of resettled people in dam projects. A general tendency is for the planners to only take care of the physical relocation of the resettlers, while ignoring the issue of rehabilitation (Hemadri, Mander and Nagaraj 1999:viii). Another main issue in the report is the model for compensation: Compensation for lost fixed assets, which are supposed to be based on the market value, is often undervalued to avoid fees. It is also recognised as a problem that the assets are compensated at market value, instead of replacement value. The decision regarding who will receive compensation is also complicated by uncertainty regarding the legal title of the fixed assets: People who have not got a legal title to fixed assets are usually not considered eligible for compensation (Hemadri, Mander and Nagaraj 1999:xiii). There are also reservations against using cash as means of compensation, because the receivers are not able to use the financial support for creating a sustainable livelihood. Undervaluation of fixed assets and the inability of the people to negotiate a money economy create difficulties for the resettled to purchase land for cultivation (Hemadri, Mander and Nagaraj 1999:xv).

Webber and McDonald (2004) have examined the effects of resettlement on livelihood, resulting from the construction of the Xiaolangdi Dam on the Yellow River in China. They investigated the resettlement of two different villages, Baigou and Dongpo, which has a somewhat different starting point: Dongpo having a stronger socio-economic foundation than Baigou (Webber and McDonald 2004:679). The latter is more dependent on agriculture than the first, which relied on other natural resources and non-agricultural work. The researchers used Cernea's IRR Model as a framework for assessment, by looking at arable lands and jobs. Baigou experienced a decrease in income from crops, but an increase in income from non-agricultural work and grain output because of better quality of the new land, leading to a doubling of income per adult (Webber and McDonald 2004:684). The resettled from Dongpo experienced a total decrease of income: Farm output decreased because of less land and poorer quality of their land and non-agricultural work could not be compensated for it as it did in Baigou (Webber and McDonald 2004:686). In addition, they lost sources of income from fishing and forest-resources. People from both villages were employed in the construction-phase, although it is likely that the increased income stemming from the construction is only temporarily, leaving them worse off than the situation at the time of the research (Webber and McDonald 2004:686).

The Asian Development Bank has published a *Handbook on Resettlement. A Guide to Good Practice*, which includes general trends on effects from resettlement as well as guidelines for improved resettlement procedures and policies. It points to loss of assets, like land, income sources and livelihoods following a resettlement caused by changes in patterns of use of

natural resources, which again can cause other negative effects, loss of house and community structures, community resources, habitat, cultural sites and goods (Asian Development Bank 1998:1). The sites for resettlement in the Indian experiences have also proposed certain challenges. The sites are often chosen without assessing the possibilities for livelihood opportunities and the preferences of the resettled (Hemadri, Mander and Nagaraj 1999:xvi). If the resettled are not given new land as compensation for the expropriated land, there is often a lack of alternative employment opportunities as sources for livelihood sustainability (Hemadri, Mander and Nagaraj 1999:xx). Resettled sites where there is already a settled community creates problems in terms of competition for the jobs and available resources, which are often scarce (Hemadri, Mander and Nagaraj 1999:xx).

de Wet points to how the practical implementation of the relocation-process in several instances has been relatively successful, but that the long-term development planning of the resettlement seems to have been ignored. He exemplifies with projects where clearance of land has not been accomplished by the time of the resettlers arrival and there has not been an adequate income restoration (de Wet n.d.:8). Resettled people risk being resettled in areas which are not compatible with their earlier way of living or in areas where the natural resources are of poorer quality (WCD 2000:107). The issue of compensation of those who are resettled has also been somewhat inadequate, although the different projects have carried out different schemes for compensation. One of the models for the resettlers in the coming Nam Theun 2 Hydropower Project in Laos involves providing them with a piece of irrigated land with trees and work in the forest industry and exemplifies the different modes of compensation. Scudder, Thayer and Whitmore points to three issues questioning the viability such models and which represent some of the challenges regarding compensation to project-affected people. First of all, the resettlers have to engage in livelihood-supporting activities which was not their own choice. Second, they will produce less of their own food. Third, they will become dependent upon market-driven forces beyond their control for livelihood sustainability (Scudder, Talbot and Whitmore 1997:21). Another model for the project in Laos aims at a more diversified strategy for self-sufficiency. Its advantages are its inclusion of the resettlers' priorities, paddy fields and livestock, and the use of the reservoir's drawdown area (Scudder, Talbot and Whitmore 1997:22). Cash compensation leads to higher consumption for a while and then leaves the people worse off than they originally were (de Wet n.d.:9). According to de Wet, compensation for crops in their old fields has usually been given, while compensation for loss of land has been more problematic. As in the Indian experience, there are often difficulties in deciding who should receive compensation when there is insecurity about the ownership and use of land (de Wet n.d.:9) in addition to compensation being delayed. Compensation has proved successful in schemes where the resettled has been given the option between two ways of compensation: self-settlement and scheme-housing, or when the compensation has been divided into two parts: housing and cash (de Wet n.d.:17). He also points to the agriculture schemes that has accompanied many plans for resettlement in dam projects and their failure to decrease dependence upon scheme structures, resulting from many different failure on planning the resettlement areas (de Wet n.d.:10/11). This fits well with the observations of Dorcey et. al. (1997:42), who recognised that resettled people experience "*a lack of opportunities for restoring and improving living standards*."

IRN recognises two major impacts on people's livelihood as a consequence of dam-induced resettlement: the risk of food insecurity and the decreased well-being of the resettled (IRN 2003a:1). In cases of land-for-land compensation, the new land is often smaller and of poorer quality, and when there is cash-compensation, it is not enough to buy a new plot of land (IRN

2003a:2). Most of the resettled following the Houay Ho Hydropower Project in Laos has got too little land, of which much in addition is marginal and of poor quality (IRN 2003b:2). Affected people of the construction of Nam Song Diversion Dam have experienced loss of agricultural land because of erosion and flooding (IRN 2003b:2). The huge impacts on the resettled communities can be exemplified with the Kainji Dam in Nigeria, where 50 000 people were displaced and several hundred thousands more were affected by reduced crop production and fishing (IRN 2003a:2).

Thayer Scudder has examined the impacts on resettled communities in 50 different dam-constructions and recognised four types of outcomes: Improved living standards among a majority of the resettled, restored living standards among the resettled, worsened living standards among the majority that were followed by improvement through non-project related opportunities and worsened living standards for the majority without improvement (Scudder n.d.:9). Scudder presents statistics on the outcome through *the Four-Stage Process for Achieving Successful Resettlement* and Cernea's eight impoverishment risks (Scudder n.d.:3), and concludes that the impacts of large dams on resettlement is both unsatisfactory and unnecessary (Scudder n.d.:26). Of 44 dam-projects, only 7% experienced improved living standards and 11% experienced a restoration of living standards. The rest experienced a worsening of their living conditions. The main problems related to the resettlement-sites were lack of arable land, less fertile soils and more dependence on government policies or external agencies (Scudder n.d.:9). In only 18% of the cases the resettlement process was completed. This complicates the investigation of whether restoration or improvement could occur or if the resettlement process is at status quo without prospects for beneficial change (Scudder n.d.:9). Regarding Cernea's eight impoverishment risks, the result provided a negative outcome for the status of the resettled. Landlessness was a problem in 86% of the cases (Scudder n.d.:22) and joblessness in 80% of the cases (Scudder n.d.:23). Food insecurity was reported in 79% of the cases and a total of 76, 7% experienced marginalisation (Scudder n.d.:24). Access to common property resources has proved to be vital for many people in order to sustain a livelihood. A lack of it often becomes the result after resettlement. In the few cases where the planners had taken this into consideration, five out of eight cases experienced positive outcomes (Scudder n.d.:25).

Dorcey et al (1997:43) has presented a four-stage model for resettlement. The first stage is planning and recruitment and the second is where the resettlers adapt to the new site. The third is the formation of economic development and consolidation of a new community whilst the fourth and last stage is characterised by a total incorporation into the new community and the ability to compete for jobs and resources with the other locals successfully. As in the cases of resettlement in India, most displaced people don't get further than stage two.

Despite the difficulties in finding suitable alternatives for livelihoods, fishing-opportunities can be fairly easy to provide for the project-affected people, facilitated by the construction of the dam (Hemadri, Mander and Nagaraj 1999:xx). There are also potential for some beneficial opportunities arising after a dam-project has been implemented for the resettled: Rain fed and irrigated agriculture together with both farm and non-farm activities and reservoir fisheries (WCD 2000:84; Scudder n.d.:17), aquaculture, tourism, catchment management and establishment of natural reserves in the reservoir drawdown area (Scudder n.d.:17). This of course depends on the location of the new sites of the resettled and the characteristics of the dam and the surroundings. Similar observations has also been reported by the Operation Evaluation Department of the World Bank (OED), which points to the benefits of dams on a macro-level, but also recognises some of the negative effects of dam construction. The report



points to the resettlement issue, especially those resettlement projects which were implemented without proper guidelines and their impact on indigenous people. It emphasises that negative impacts on fisheries can be overcome by developing new fisheries in the reservoir and how negative downstream effects is usually more a result of inadequate complementary investments than the dam project itself (OED 1996). de Wet also points to how resettlement schemes create new opportunities, especially important being the possibility to diversify the income, spread the risk and increase the income (de Wet n.n.:12).

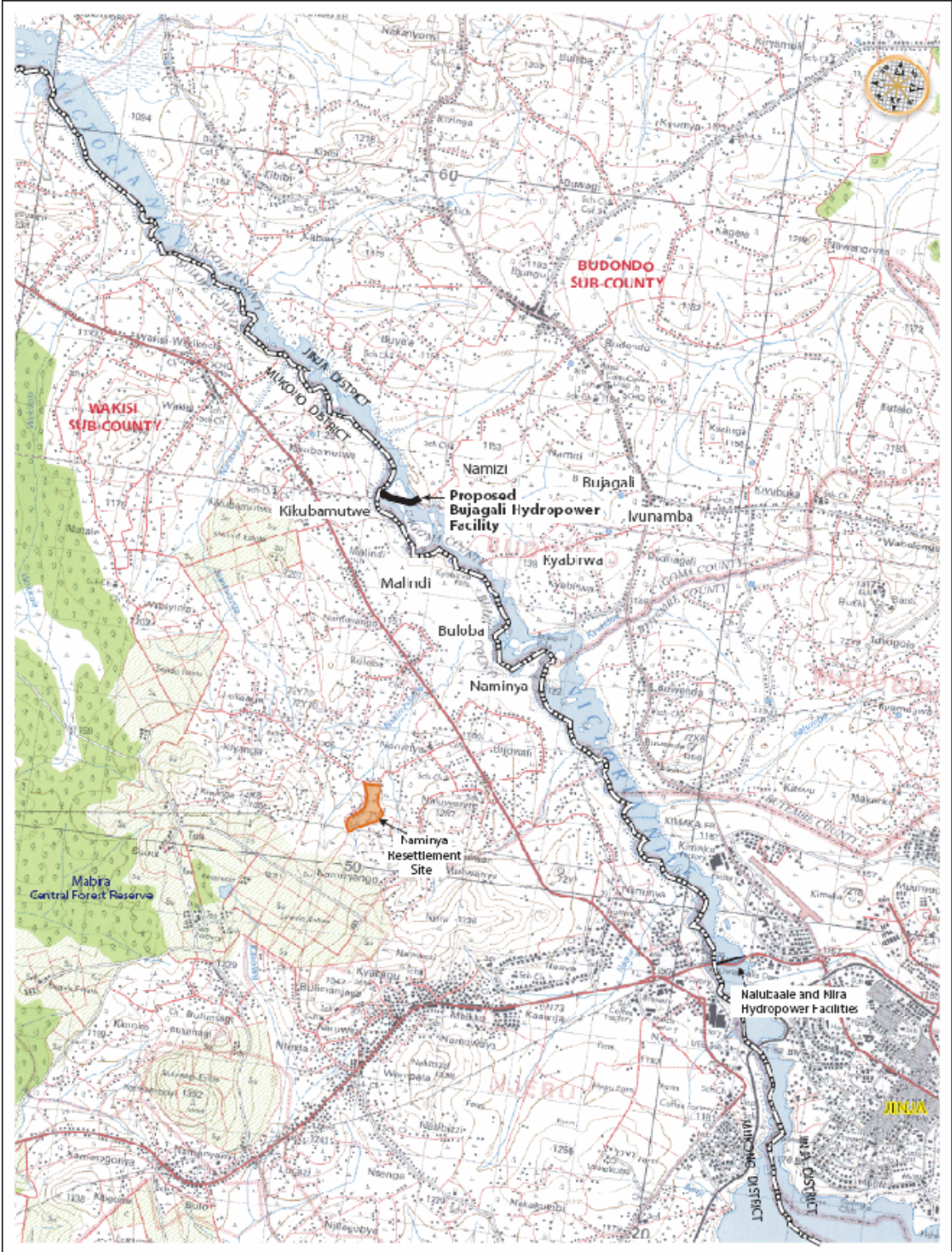
### **3.2.2 Downstream**

Adams points to how downstream impacts is a result of “*complex interactions between environmental impacts and economic impacts*” (Adams 2000:3) and that the dynamic nature of the environment leaves a high degree of uncertainty (Adams 2000:6). But there are a few tendencies to be found regarding downstream impact. A dam can impact downstream agricultural activities, because these are often dependent on practices developed through the knowledge of the flow patterns (Adams 2000:8). Second, the dam is likely to impact downstream fisheries through altering the physical stability of the river, the loss of spawning grounds for fish, the water quality and the flooding patterns, reducing the fish population (Adams 2000:10/11), and therefore affecting the natural capital constituting a source for livelihood. IRN also recognises similar impacts which have been common for downstream populations and the consequences of change in the flow regime: There has been a decline in fisheries, poor water quality and a disruption in the flood-regime has affected the possibilities of irrigation and fertilising on agricultural plots as well as filling up wells. The reports points to how this especially affected the traditional floodplain farming, fishing and grazing in Africa (IRN 2003a:2).

Adams presents an assessment regarding dam’s potential impact on people’s assets, based on Carney’s five forms of capital: Natural capital, financial capital, physical capital, human capital and social capital (Adams 2000:14). Natural capital can be affected through a decline in fisheries, difficulties in farming and grazing. Financial capital can be affected indirectly through impact on the ability to utilise natural resources. This can for example be farming or fishing, if these activities generate an economic income. Adams points to how physical capital can be affected in two ways: Through broken promises of infrastructure to the downstream population and indirectly through affecting the natural and economic income. Human capital can be affected through impacts on the availability of education and in cases where indigenous knowledge becomes obsolete (Adams 2000:14), while social capital can become irrelevant and new patterns of how a society is organised can occur (Adams 2000:15). Adams (2000:15) also points to how livelihoods that are based on both natural capital and non-natural capital can experience transformed livelihood strategies and activities through an alteration of the natural resources base.

There has also been a change in people’s migratory patterns following impacts by dams: Either through an increased urbanisation or a change in the seasonal and permanent settlement patterns of people in the fishing-industry (Adams 2000:15). Livelihood outcome is dependent on the assets, strategies, vulnerability context and framework in which a livelihood exists, and can be affected in the following ways: Economic income and social capital can decrease, together with a disruption of seasonal cycles which are culturally important (Adams 2000:15). The vulnerability context of a household can increase because of change in the flood-regime

and the environmental sustainability can decrease due to overexploitation of alternative resources (Adams 2000:16).



*Map 3.1: Localisation of the Bujagali Hydro-Power Dam in the Mukono and Jinja districts*

## **Chapter 4 Assessment of the Bujagali Hydro-Power Dam**

### **4.1 Predicted Environmental Effects of the Bujagali Hydro-Power Dam**

The *Social and Environmental Assessment* (SEA) of the Bujagali Hydro-Power Dam by R.J. Burnside, partially based on the previous assessment report by the AESNP, is the main source of information about the environmental effects of the dam. This paper will concentrate on the effects that have a direct effect on the local livelihoods. This is because the impact of these effects is possible for me to investigate and because other effects on livelihood, like carbon emissions, are too far-reaching and too complicated to investigate within the boundaries of this paper.

No village centre will be flooded as a result of the dam, but cultivated islands, cultivated steep parts of the riverbank and settled and cultivated areas between the village centres and the rivers will be drowned by the impoundment. The shoreline of the reservoir will be between 28km and 36 km (R.J. BIL 2006:360). Eight villages will be directly affected by the project: Buloba, Malindi, Naminya and Kikubamutwe on the western bank and Bujagali, Ivunamba, Kyabirwa and Namizi on the eastern bank (R.J. BIL 2006:112). All in all, 238 ha of land will be affected: 125 hectares will be required permanently for the dam, switchyard, access roads, etc, while 113 hectares will be needed for the construction period (R.J. BIL 2006:344/345). 75% of the permanent land take is agricultural land (R.J. BIL 2006:357).

The project-affected people are defined as people who experience loss of assets of some kind as a result of the project, and is estimated to count 8700 people, or 1288 households (R.J. BIL 2006:346). Potential losses of assets because of the construction are: land, crops and buildings, by land-owners, tenants or sharecroppers (R.J. BIL 2006:345), some of which are eligible for relocation, some which are not. The project-affected people are divided into two categories: Physically Displaced People and Economically Displaced People. The amount of people that have been displaced is 634 people, or 85 households. Of these, 34 households moved to Naminya Resettlement Site and 51 households relocated by own means and the compensation provided by the AESNP. 16 of these relocated to unaffected parts of their plots (R.J. BIL 2006:346/347). The relocation of parts of the downstream settlement caused by the physical alteration of the area is likely to create several adverse impacts on the resettled community. Especially the impact on their assets is likely to have a wide range of repercussions, as little is done to counteract the negative effects. The new site does not propose the expected risk of difficulties with the original settlement, as the site is in a remote area, but this on the other hand creates the opposite risk: A limited amount of alternative livelihood activities to counteract the losses of their original livelihood situation and their isolation.

During the operation, it is not likely that there will be any significant effects on the flow-regime decided by the Owen Dam, except from in the immediate area of the facility. After the completion of the hydropower facility, the Minimum Residual Flow (MRF) will be no less than 97,5% than that of the Owen Dam (R.J. BIL 2006:358) and the changes in the discharge downstream of the Bujagali Falls are likely to be unnoticeable. The report does not expect downstream impacts on agriculture which has been prevalent in many other similar projects, as the agriculture is not based on flood-recession practices. However, low level of erosion can

occur in the immediate downstream area of the dam (R.J. BIL 2006:451), which might impact the agricultural plots which are situated next to the river. Erosion caused by the Cahora Bassa Dam in Mozambique led to severe impacts among the locals farmers and the current level of erosion in the project-affected area has already proven to be a problem for the agricultural sector (R.J. BIL 2006:58).

Previous empirical research points to changes in the river's biological productivity following a dam construction, and the Bujagali Hydro-Power Dam has the ability the fisheries both directly and indirectly by affecting the aquatic ecosystem. First of all, the construction phase will also preclude the use of boat landing sites at the Dumbbell Island and the facility will preclude all use of upstream landing sites for the fisheries after the impoundment (R.J. BIL 2006:379). Further on, it can affect the water quality, through increasing the downstream suspended sediment, decrease suspended sediment in the reservoir, eutrophication in the reservoir and dissolved oxygen depletion in the reservoir. The impact of suspended sediment on fishing is assessed to be low, since the amount of water is high, but it can affect both navigation and fishing activity (R.J. BIL 2006:364). The increased amount of sediments is assessed to have "*no significant impacts*" on aquatic species and the eutrophication will ultimately depend on several factors making difficult to predict the actual effects (R.J. BIL 2006:365). The dam can also affect invertebrate prey species because of water depth, flow velocity and diurnal water level fluctuations and together with transparency, this can also affect the macrophyte species (R.J. BIL 2006:371). Through changes in food availability (phytoplankton and invertebrates), habitat (by changes in water depth, flow velocity, diurnal water level fluctuations and effects on the macrophyte species) and feeding efficiency, the dam can affect juvenile fauna. Finally, changes in the habitat on basis of water depth, water transparency, flow velocity and water level fluctuation and the loss of downstream feeding and spawning grounds can affect both feeding and spawning grounds (R.J. BIL 2006:371). In addition, suspended solids can directly increase the morbidity of fish, as fish gills can get clogged, potentially causing suffocation (R.J. BIL 2006:364). Despite this, the local fish species is considered to be *tolerant*", and are not found to be particularly at risk. Despite potential adverse impact on the migration patterns of some of the species (R.J. BIL 2006:375), the physical blocking of migration routes by the dam is not expected to harm the fish population, as they are not "obligatory migratory" (R.J. BIL 2006:96). A fish ladder has therefore not been considered necessary. Despite a complete loss of fish species in similar projects, the SEA on the Bujagali dam does not report any expectancy of loss off species.

Access to clean water is also challenged. Contamination of the water on the site of the construction is expected from several activities regarding the dam (R.J. BIL 2006:365). Leakage from the site's sewage system, process water, surface water and general leakage from the construction site proposes a risk against the water quality as well as spillage of chemicals (R.J. BIL 2006:365). The access to drinking water and other activities, like washing, can also be affected. The diversion of the river requires fencing off another two kilometres on the Western bank but measures are planned to secure access to water (R.J. BIL 2006:378). The impacts on the access to clean water and access to fish sites are said to be mitigated to counteract adverse effects on the nearby settlements.

The potential effects of the Bujagali Dam resemble the effects that have been prevalent in similar projects, although the actual impacts are expected to be less severe: The SEA states that the only mechanism which is likely to impact the downstream area is the water quality, through a slight decrease in the suspended solids and increased transparency (R.J. BIL 2006:371) in addition to a minor impact on the adult fish habitat during the construction

phase. This will result in a reduced hunting efficiency (R.J. BIL 2006:372). However, the report have been criticised for not having enough scientific backing for their conclusion (Uganda Nile Discourse Forum 2007:7; National Association of Professional Environmentalists (LTDE) (NAPE) 2007:6), and the actual effects and impacts are therefore difficult to deduct. Further adverse impacts beyond the time of construction on the fisheries can therefore occur.

## **Chapter 5 Theoretical Framework**

### **5.1 Introduction**

Christopher McDowell presents in his article *Involuntary resettlement, Impoverishment Risks, and Sustainable Livelihoods* a combination of two different approaches to investigate the socio-economic and cultural impacts of forced population displacement, involuntary resettlement and livelihood reconstruction (McDowell 2002). The two approaches are based on Michael Cernea's *Impoverishment Risks and Reconstruction Model* and *Sustainable Livelihoods* model. McDowell aims to combine elements from the two models for accounting the changes in the basic material and social, tangible and intangible assets that people possess, and to investigate the impacts of the change on people's livelihood strategies (McDowell 2002). McDowell argues that *sustainable livelihoods* and *impoverishment* are both compatible and appropriate for understanding the impacts of disasters and forced displacement on livelihoods of those affected and the process of reconstructing livelihood after a disaster. Soini, who has studied the interaction between livelihoods and the environment in East Africa, points to the interaction between livelihoods and the environment which closely relates to the interaction between poverty and the environment (Soini 2006:3).

### **5.2 Impoverishment Risks and Reconstruction Model for Resettling Displaced Populations**

The IRR model is a risk-analysis tool for social research in resettlement issues. It was developed as a tool for preventing negative impacts before they occur as a consequence of dam construction, instead of mitigating them after they have occurred (Cernea 2004:3) Cernea points to how the issue of resettlement has been relatively heavily debated in a dam project: The projects often affects a large amounts of people, there are no or weak supporting regulations and the resettlement is accompanied by a shortage of financial support (Cernea 2004:7).

The model is based on three fundamental concepts; risks, impoverishment and reconstruction (Cernea 2004:14). Risks and impoverishment is most relevant for this research, by providing means for assessment. The model can be used for the four following objectives: Predictive, diagnostic, problem-resolution and planning function and as research methodology. The first category aims to anticipate risks in projects involving resettlement and displacement, the second uses the model to guide the operational project preparation regarding the impoverishment risks. The third uses the model to find measure to mitigate or pre-empt the risks and the fourth to study the displacement through constructing hypotheses and organise, conceptualise and interpret the findings (Cernea 2004:15). This research will be based on the last category, as the aim is to assess the impacts of a dam construction.

Cernea presents four main classes of negative effects than can occur in a dam project: Forced population displacement and impoverishment, boomtown formation around major constructions, downstream unanticipated changes in agro-production systems and loss of cultural heritage assets (Cernea 2004:4), of which the first and third is relevant for this research. The model contains eight main components representing risk, impoverishment and

reconstruction: Landlessness, joblessness, homelessness, marginalisation, increased morbidity and mortality, food insecurity, loss of access to common property and social disarticulation (Cernea 2004:15). Landlessness is especially a risk, because dam-projects often include expropriation of lands which are important for maintaining livelihoods, and which are often not fully compensated. Joblessness refers to the loss of opportunities for wage employment, while homelessness refers to the risk of losing one's home, which is especially severe if it happens for a long period of time. Marginalisation points to the risk of resettled families losing economic power and experiencing a declined socio-economic status. Human capital can be left lost or made obsolete and the marginalisation can be accompanied with a social and psychological marginalisation. Increased morbidity and mortality refers to the health-risks associated with resettlement, which are often associated with stress, psychological traumas and an outbreak of parasitic and vector-borne diseases (Cernea 2004:16). Food insecurity is a risk following the disruption of a community's system of food supply and loss of access to common property is often a consequence of relocation which is not taken into consideration during the planning-process. Often resettlement-process also tears up the social structures of a society and the loss of formal and informal networks can minimise the level of social capital (Cernea 2004:17).

### **5.3 Sustainable Livelihoods Approach**

The SL approach is a way of thinking mainly concerned with objectives, scope and priorities for poverty elimination (Coutts n.d.), aiming at using a holistic view of poverty. It especially aims at looking at the different causes for poverty, and putting people in the centre of development (Department for International Development (DFID) 1999a:1). The approach has been systematised through the *Sustainable Livelihoods Framework*, a framework for eliminating poverty, which points to how the *vulnerability context*, *livelihood assets* and *transforming structures and processes* impact the *livelihood strategies* and the *livelihood outcomes* (DFID 1999:1b). The approach lets the project-affected people themselves find the indicators of poverty and identifying and addressing their own livelihood strategies. The approach investigates the poor's livelihood system and how it is sustained under economic, environmental or political stress, through "*the wealth of the poor*", which can be reflected through indigenous knowledge, special skills, resourcefulness, social support systems and livelihood strategies (Butler and Mazur 2004:3).

Livelihood can be defined as "*resources or assets or capital (human, natural, social, physical and financial capital and access to use these) that enable strategies to be employed in order to survive and attain desirable livelihood outcomes such as income, food, security, well-being and sustainable use of natural resources*" (Carswell (1997); Carney (1998); DFID 2002 in Soini 2006:1), or "*a livelihood comprises the assets (natural, physical, human, financial, social assets), the activities and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household*" (Ellis 2000:10). A sustainable livelihood incorporates issues like the possibility to satisfy self-defined basic needs, which is resilient to shocks and stress, and which does not undermine the future use of natural resources (Soini 2006:1). And "...*A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base*" (Carney (1998) in Carney (ed.) 1998:4; Chambers and Conway 1992:7).



The vulnerability context refers to the context in which people live and how trends, shocks and seasonality affect people's livelihoods, possible strategies and availability of assets (DFID 1999:3b); external factors which people normally have no control over (DFID 1999b:4). These factors can affect livelihoods from the macro level, meso level and micro level. Assets can be affected by both the vulnerability context and transforming structures and processes (DFID 1999:6b) and can be defined as "*stocks of capital that can be utilised directly, or indirectly, to generate the means of survival of the household or to sustain its material well-being at different levels above survival*" (Ellis 2000:31). Livelihoods with several assets usually have more options and several strategies to choose between (DFID 1999b:6). There are several different types of assets people can base their livelihood upon, and their status is often interrelated. Scoones (1998) has identified five different forms of capital forming assets for poor people: natural capital, physical capital, financial capital, human capital and social capital. Natural capital is defined as "*the natural resource stocks (soil, water, air, genetic resources etc) and environmental services (hydrological cycle, pollution sinks etc) from which resource flows and services useful for livelihoods are derived*" (Scoones 1998:7) while social capital is the social resources which people draw upon. Human capital refers to skills, knowledge, the ability to work and health and physical capital is basic infrastructure, production equipment and other means people use to reach their livelihood outcome (Scoones 1998:8). The combination and dynamics between the different assets in a livelihood creates different livelihood outcomes (DFID 1999b:6). According to Frank Ellis, assets constitute the "*livelihood platform*" in livelihood analysis (Ellis 2000:30). Transforming structures and processes are the institutions, organisations, policies and legislation that influence livelihoods and basically set the standard for access to components that affect livelihoods, the "*terms of exchange*" between the different types of capital and the returns to livelihood strategies (DFID 1999b:17). Structures can be defined as the tangible sources of influencing factors, like governmental or private institutions, whilst processes are intangible, like policies and culture.

Equally important is the livelihood *strategies* that people undertake. Koczberski, Curry and Gibson (2001:41) have investigated the smallholders livelihood strategies in the palm oil sector in Papua New Guinea and have defined livelihood strategies as "*activities undertaken by smallholders households to provide a means of living*", and the key goal is economic and social security of the household. Livelihood strategies are dynamic and are *composed of activities that generate the means of household survival* (Ellis 2000:40). People will choose the livelihood strategy that will lead to the best possible outcome in terms of well-being and poverty-reduction within the possibilities that the surroundings present (Cahn n.d.:3). This makes the issue of livelihoods, sustainability and strategies both dynamic and complex, because it is dependent upon many different factors, like what kind of assets constitutes the basis for livelihood, which can be several, the setting in which the livelihood takes place and the choices which are taken on the background of the possibilities, constraints and personal objectives and needs. In practice this means that within a relatively homogenous community, there can be several different ways of sustaining a livelihood. This is especially relevant concerning diversification of incomes, which "*lie at the heart of livelihood strategies in rural Africa*" (Barrett, Reardon and Webb 2001:1). Rural livelihood diversification can be defined as "*the process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and to improve their standards of living*", and is not only limited to only income diversification, but also incorporates social institutions, gender relations, property rights and public services (Ellis 1998:4). Livelihood strategies can be partly investigated through the diversification patterns that are undertaken by a household. Diversification patterns are the voluntary exchange and allocation of assets across various

activities in order to achieve “*an optimal balance between expected returns and risk exposure conditional on the constraints they face*” (Barrett, Reardon and Webb 2001:3). It forms a part of the livelihood system, which is the “*integrated set of livelihood strategies*”, and originally especially emphasising the importance of the environment in the livelihood dynamics (Claval (1974); de Haan (2000) in Soini 2006:1). Diversification can result both from a deliberate choice and from an involuntary necessity (Ellis 1998:2; Ellis 2000:5). Some common reasons for diversification are risk reduction and complementing various activities (Barrett, Reardon and Webb 2001:2), seasonality, differentiated labour markets, coping behaviour and for savings-and investment strategies (Ellis 1998:11). Risk reduction is caused by weak or incomplete financial systems, which promote diversification to stabilise income and consumption, the job and land-market and the uncertain climatic conditions. As push factors, commercial agriculture or the access to urban markets can act as an incentive for diversification (Barrett, Reardon and Webb 2001:2). On a general level, non-farm income can constitute as much as 40-45% of a household’s income in rural Africa, complementing the self-subsistence of farmers, which is the common basis for livelihood sustainability. Consequently, investigating the dynamics and strategies of livelihood can be an enormous task, since almost every factor contributing to upholding a livelihood is arguably relevant for research (Ellis and Freeman 2004:8).

Using the SL approach to investigate the impact of dams on project-affected people has, to my knowledge, not been pursued, but Caroline Ashley and Karim Hussein has incorporated and developed this framework in research regarding livelihood impact assessment through the African Wildlife Foundation. Ashley and Hussein (2000:13) points to how local development impact is usually measured solely by using indicators of cash, increased production and the availability of jobs. The livelihood approach focuses on people’s lives instead of solely on resources and defined standards for project output (Ashley and Hussein 2000:14). Their focus on well-being and that in, addition to income, it incorporates factors like food insecurity, social inferiority, exclusion, lack of physical assets and vulnerability. In addition, household poverty is determined by factors like access to physical assets and the influence of policies and institutions. The report also emphasises the outsider’s inability to understand the objectives of a household’s livelihood strategies and that impact assessments must be based upon prior knowledge and on knowledge on how the households in the study are constructed. In short, the “*change in measurables (e.g. cash, yields) must be assessed not in their own right, but in terms of the contribution they make to livelihoods*” (Ashley and Hussein 2000:14). The measurables can impact livelihoods both directly and indirectly (Ashley and Hussein 2000:15). Ashley and Hussein (2000:15) present two key themes which are regarded as important in livelihood assessments: The first understanding of the current livelihood practices, how these are influenced by the project of evaluation and the difference between the groups of stakeholders. Second, the importance of using other indicators than income and expenditure for assessing poverty and vulnerability has also been commented by Mozaffar Qizilbash (2001), drawing on Amartya Sen’s critique of the economic indicator of poverty. The economic indicator can be found in the Millennium Development Goals, focusing on eradicating extreme poverty and people living on less than \$1 a day. An alternative to the economic indicator is the focus on well-being, or human poverty, which in earlier research has provided a different picture of the poverty-situation than by using an economic indicator (Qizilbash 2001:2). Amartya Sen meets the economic indicator by asking: “*Is deprivation not ultimately a lack of opportunity to lead a minimally acceptable life, which can be influenced by a number of considerations, including of course personal income, but also physical and environmental characteristics, and other variables*” (Sen 2002:86). One of the reasons for Sen’s disregard of an economic indicator is the assumption that different people have different

needs. Sen suggests assessing the possibilities for achieving *functionings* when investigating qualities of life (Qizilbash 2001:3). This approach takes specific situations and strategies into consideration and also incorporates Sen's focus of "relativity" into the assessment; that the notion of poverty is relative according to the surroundings and other people, and on the other hand it is absolute in terms of the possibility of achieving basic doings (Sen 2002:87; Qizilbash 2001:3).

Desirable livelihood outcomes in this framework are increased income, reduced vulnerability, improved food security and a more sustainable use of natural resources (DFID 1999b:1), of which the three former are relevant in terms of impoverishment at a personal and short-term level. Desirable livelihood outcomes can also vary according to different needs and objectives at the personal level and what constitutes poverty can be defined differently from person to person. The access to assets is one of the most critical factors in reducing poverty (DFID 1999b:6). Poverty can be defined according to subjective and objective, absolute and relative perceptions, but usually aims at establishing *well-being* in one way or the other (Dasgupta (1993) in Ellis 2000:77) and points to the ability of people to realise their potential. As well-being can be difficult to measure *per se*, this paper will investigate impoverishment through certain indicators, based on Cernea's IRR model, that I believe is able to represent important aspects of poverty (Ellis 2000:77). These indicators will be presented in the below. In addition, the paper includes the individual definitions and ranking of personal poverty when analysing the findings among the project-affected people.

The SL approach has been criticised for being too focused on the local setting and local perspectives and that this might exclude other external forces which impact local livelihoods. As locals might not have the ability to understand how external structures determine their livelihoods situation, certain components that are important for their livelihood outcome might not be included in the research and the livelihood situation may therefore not be properly understood (Havnevik, Negash and Beyene 2006:17). This focus therefore needs to be taken into consideration regarding both the analysis and conclusion, as it might not have been able to capture other relevant elements.

#### **5.4 Framework for analysis**

The previous empirical research and the models presented above will constitute the framework for methods and the analysis of the findings from the Naminya resettlement village and the downstream settlements. This section will present how I will use the previous empirical research, the assessment of Bujagali dam and the components of the models to investigate impoverishment among the project-affected people.

Previous empirical research on dams has been presented in chapter three and four, with focus on the environmental effects and the impact on livelihoods which have been most prevalent. This has provided this research with general trends functioning as a framework where the specifically proposed impacts of this project have been analysed in relation to. The assessments of the Bujagali dam has on basis of the specific characteristics of the dam and the location, predicted what kind of environmental effects the dam could potentially generate. These potential effects have been compared with the findings from previous research in order to establish how the Bujagali dam is likely to impact local livelihoods.

This paper is based on two models which will be used to investigate the propositions in relation to the local livelihoods and the level of impoverishment among the project-affected people: The IRR model and the SL approach. These two models have the ability to complement each other in order to get the best possible information about the local livelihoods. The SL approach especially contributes to the method used for data collection, while both models emphasise what sort of focus the research should have. The SL framework points to the overarching elements constituting a livelihood and how the different elements influence each other to create a livelihood outcome, while the components of the IRR model specify what kind of livelihood outcomes these elements can generate and function as indicators of poverty and impoverishment.

The IRR model has provided the paper with the tools to extract relevant information regarding the project-affected people's livelihood situation. Despite the initial aim of this model as being a tool for pre-emptive measures against impoverishment, it has been used as model for investigating the livelihood situation of the project-affected and potentially project-affected people in the Bujagali project. Although the model aims at being a tool for investigating and mitigating impacts concerning resettlement issues, elements from the model are used to provide an assessment of the downstream livelihoods as well. This is because the model uses some basic elements for research that I see as relevant for investigating impoverishment also in the downstream communities, since the effects can have similar characteristics as the ones affecting the Physically Displaced People. In addition, as their livelihood situation has many similarities, their livelihood outcome is also likely to be somewhat similar. Using the components introduced in this model for collecting data on the local livelihoods and the risks of impoverishment in both settlements offers a tool for assessing their livelihood situation and how they have been and can be affected. Four components representing risks of impoverishment from this model have been used to extract information about the local livelihood; Landlessness, joblessness, food security and marginalisation. These four components were mainly chosen because of their adaptability to the SL approach and the ability for me as a researcher to extract information about these issues. These components are also often considered to be the most common and basic definitions of poverty. In addition to being indicators of impoverishment, the components are relevant for the types of questions used for extracting relevant information and the main focus of the interviews. Second, they are important for the analysis, as they, together with the general components of the SL approach, represent the factors which constitute risks of impoverishment among the project-affected people.

The SL approach and framework also largely decides the methods and the way in which the findings are analysed. The approach provides the research with an overarching understanding of the important issues for assessing livelihoods. The SL approach especially emphasises that the respondents themselves define what is important in their livelihood situation and that they are not assessed according to absolute terms. Further on, the SL framework is important for analysing the findings, as it provides the analysis with categories, together with the components of the IRR model, which the findings will be analysed in relation to in order to assess the risks of impoverishment among the project-affected people.

The previous empirical research and the two models have led to the following nine propositions on how the Bujagali Hydro-Power Dam will affect the local livelihoods and constitute a risk of impoverishment. These propositions largely decide the structure and focus of the analysis.

Resettlement:

1. The compensation that the displaced people receive will not restore or improve their livelihoods.
2. The resettlement will affect the assets the livelihoods depend on.
3. The resettlement area has a lack of employment opportunities.
4. The resettlement will provide new livelihood activities and opportunities for diversification.
5. The resettlement can lead to landlessness, joblessness, food insecurity and marginalisation among the resettled population.

Downstream:

1. Loss of assets will not be compensated.
2. The dam will affect assets that local livelihood depends on.
3. The dam will affect the livelihood strategies of the locals.
4. The dam constitutes a risk of landlessness, joblessness, food insecurity and marginalisation in the downstream population.

## **Chapter 6 Methodology**

### **6.1 Contextual Research**

The focus of this research is *contextual*, meaning that its methods are applied to a *specific locality, case or social setting*. It does not intend to create a broader generalisation, but rather to investigate certain effects of the Bujagali Hydro-Power Dam. This implies more inductive research methods and aims to capture judgements and perception and the possibility to analyse complex and non-quantifiable cause-and effect processes (Holland and Campbell 2005:3). Maybe most important of all, inductive research methods aim at investigating the meanings that people associate with these processes.

### **6.2 Choice of Methodology**

In this thesis I have used both quantitative and qualitative methodology, with qualitative as the main method. Methodology can be defined as “*the choices we make about cases to study, methods of data gathering, forms of analysis etc. in planning and executing a research study*” (Silverman 2001:4). It explains *how* we will study a phenomenon. Below I will present the methodologies and the different methods I have chosen for studying the effects of the Bujagali Hydro-Power Project.

#### **6.2.1 Qualitative Methodology**

The reason why I have chosen a qualitative methodology as the main research method is based on the topic, the aim of the thesis and the theoretical framework. Qualitative methodology is suited for research where the aim is to investigate people’s life stories or everyday behaviour (Silverman 2001:25) or as in this thesis: Subjective perceptions of situations and actions. First of all, the aim of the thesis is not generalise the results to represent a larger population, but rather to investigate the impacts on sustainable livelihoods on people in the fishing-and agricultural sectors in the downstream and resettlement communities and to extract “*authentic accounts of subjective experience*” (Silverman 2001:90). Second, I will aim to use a holistic approach to investigate the impacts on livelihoods, incorporating several elements which affect the project-affected people. Despite the fact that the respondents fully or partly sustain their livelihoods through agriculture and fishing, their livelihoods are influenced by several factors. The SL approach presents a framework for research which emphasises the multiple influences upon livelihood strategies and outcomes: The vulnerability context, livelihood assets and transforming structures and processes (DFID 1999b:1) and the interaction between these. The approach influences choice of methods, and to account for these influences, it is most fruitful to use open-end questions to extract the multiple strategies and outcomes. The research questions presented in chapter one as well as the propositions presented in chapter five have guided my research and analysis. It has aimed at investigating the expected difference in the current and future situation for livelihood sustainability in the downstream settlements and the former and current situation for livelihood sustainability in the resettled communities, in addition to emphasising the different perceptions and ways of upholding a livelihood for analysis. The SL approach

emphasises the importance of allowing the respondents themselves to identify their own livelihood strategies and outcomes and how these are influenced by different factors.

### **6.2.2 Quantitative Methodology**

The data-collection and data presentation has been done partly through a quantitative methodology, since some of the responses from the interviews are based on standardised questions. The background for this is that some information will benefit from being analysed, contextualised and presented quantitatively. The standardised questions are incorporated into an interview guide together with the open-end questions and aims at capturing certain basic elements of the respondent's livelihood situation. Further, the method is a simple quantitative method, which statistically gathers people in groups according to their value on the different indicators.

## **6.3 Methods**

### **6.3.1 Data Collection**

In this section I will present the methods I have used in my research. Methods can be defined as “*specific research techniques*” (Silverman 2001:4).

One part of this thesis has been to extract relevant information from the assessment reports concerning the Bujagali Hydro Power Project, mainly the official SEA, and requires a *text analysis* to extract the relevant information. This document was initiated, conducted and presented at the initiative of the former constructors of the Bujagali Project; AESNP, by the ESG International Inc and WS Atkins International, that has to a limited extent been developed and released again on behalf of the new company behind the construction, prepared by Burnside International Limited. One of the aims of the reports was to establish the expected impacts of the dam on several areas, and present possible solutions to some of these impacts. Despite the intention of creating an objective assessment report, it is likely that the result is somewhat influenced by the AESNP, the Bujagali Energy Limited and the Government of Uganda. I also wanted to include reports and statements from the Fisheries Resources Research Institute in Jinja, which has already contributed to the assessment report from Burnside, to expand the understanding on the impact on fisheries. However, feedback from organisations and people advised me not to, as they meant that the institute had already been pressured by the National Environment Management Authority in Uganda, and changed their statements to make it more adaptable to the official aims and goals. I have therefore incorporated statements from the following two organisations: NAPE and Uganda Nile Discourse Forum where it was possible. But statements like these have been limited, and it is therefore important to consider the background for the impact assessment when using and reading the information.

To extract data from the resettled and downstream settlements regarding their livelihood situation I used *interviews*. The interview guide was mainly constituted by open-end questions, and supplemented with some standardised questions. Both types of questions easily allowed for additional questions, when it was necessary and fruitful. The reason for using

both types of questions is that some information is possible to extract by using standardised questions and can be systemised for generalisation. Other issues are likely to be subjected to differences in livelihood strategies combined with different personal interpretation of their situation and the impacts of the dam, and are therefore best subjected to questions that are open-ended. Open ended questions make it possible for the respondents to express their “*unique way of defining the world*” (Denzin in Silverman 2001:92).

During my data collection, there were a few instances where a *spontaneous talk* occurred with respondents and other people living in the village. Some of the information that was considered relevant has been included in the analysis. These talks did not occur intentionally and was not led by standardised questions or an interview guide. The advantage of such data is that it occurs in a more “natural” setting, which might not feel as pressuring as an interview-setting and that it sheds light on new issues and factors not originally included in my research. The few spontaneous talks I had were able to shed light on, confirm and question information I had retrieved during interviews. They also allowed me to get a broader understanding of their livelihood situation, as the talks were not led by a guide and several issues were brought up.

To complement the interviews and to go more in-depth into the impacts on livelihood, I have conducted two *case studies*: One in the resettlement village and one in the downstream settlements. The case study in the resettlement village was conducted at a household that had been interviewed earlier. The family in the downstream case study had not participated in the previous interviews. The case studies aimed at investigating three different issues: A further understanding about the people’s livelihood situation and to give me the ability to go in-depth on issues that are relevant, to investigate whether I have understood the replies correctly and to give the data I had retrieved a higher degree of reliability. The methods used in the case studies were both informal interviews and observation. Data collection in the case studies were based on unstructured and spontaneous interviews with most of the questions being based on the interview guide, while the observation was a descriptive tool for investigating the livelihood situation and strategies the people use. The basis for the case studies was the results from the regular interviews, and I aimed at looking beyond the information which was given through the interviews while at the same time trying to go in depth in the issues mentioned there.

### **6.3.2 Data Analysis**

The findings from the interviews in the resettlement village have been analysed in order to investigate the impact the relocation has had on their livelihood situation and more specifically in terms of impoverishment. The downstream communities were interviewed for extracting information about their current livelihood situation, and the findings constitute an overview of their livelihood situation. These findings have been analysed in order to establish how the settlement can be affected by the dam, in terms of impoverishment. The IRR model and SL approach have been the main tools for analysis, as explained in the *Theoretical Framework*. The two types of data, text analysis and interviews were systemised separately. The data from the text analysis was gathered and systemised through a written document. The data from the interviews was first systemised according to topics and categories based on Holland and Campbell’s tool for systemising data (Holland and Campbell 2005:65/66) and was then presented through text and tables.



The analysis is divided into two parts for each of the settlements. The first part presents the empirical findings according to the propositions generated from the previous empirical research and the IRR and SL models to establish the level of impoverishment according to the indicators of the IRR model. The second part assesses these findings according to the SL approach; how the outcome is affected by the different factors. The data from the resettlement was analysed and assessed according to how the relocation has led to impoverishment of the villagers, while the downstream was assessed according to their current livelihood situation and how they can be affected by the construction of the dam.

#### **6.4 Sampling Procedures**

Which sampling procedure one chooses to use is dependent on the aim of the research, the methodology and methods, the nature of the topic and the different possibilities and restrictions that a research setting provides. The point of the different sampling methods is to enable the researcher to select a smaller sample of the population to generate results that to different degrees will characterise the entire population of study. To sample the entire population is usually neither necessary nor possible (The Commonwealth of Learning n.d.). The different sampling methods can be divided into two main categories: Probability sampling and non-probability sampling (Trochim 2006). I have used a non-probability sampling in my fieldwork. The main characteristic of a non-probability sampling method is that it does not use random sampling as compared to probability sampling. The general concern about using non-probability sampling methods is that one can therefore not depend on these generating a sample population that is statistically representative for the entire population of study (Trochim 2006).

The sampling method I used for my data collection was largely decided by my aim of the research and the constraints of the situation. My aim was not to generalise a larger population, but to look at the livelihoods of a limited amount of people, and to extract relevant information which could be household-specific and which therefore would not necessarily be subjected to generalisation. My sampling method was purposive sampling, more specifically the *snowball method* and the *non-proportional quota sampling method*. The reason why I used a purposive sampling method is because the sample population would be picked on the background of certain criteria. This method allowed me to choose a minimum of objects for the sample population in each category decided by the criteria. The advantage of this method is that it can allow for inclusion of even the smaller groups in the population (Trochim 2006), since it is not likely that the people in the sector are a heterogeneous group.

There was a sample population of 20 people in each settlement. The main *sample criteria* when selecting the sample population was that they had to use agriculture and/or fishing in sustaining their livelihood. This criterion did not however, imply that the sole source of income has to be only from these activities. I aimed at including people which are both solely dependent on agricultural income and those who are only partly dependent, since it is likely that income can come from both agricultural activities and non-agricultural activities (Barrett, Reardon and Webb 2001:2). In order to get a broad view of the situation, I included people of different ages and both genders in the sample population. The sample population also took into consideration the differences in income, both in financial terms and for self-subsistence. This was intended to include differences regarding impacts on the different socio-economic groups.

#### **6.4.1 Sampling in Naminya Resettlement Village**

The sampling procedure in Naminya was in addition to the snowball method and the sample criteria, based on assistance from a local community leader. The community leader had good knowledge about the population in the village and chose the population based on the criteria I had presented. As far as possible, these criteria characterised the sample population. The methods used in this sampling could not guarantee me an overview of the entire population though, and is the result of judgement and knowledge of the local assistance together with my criteria.

The respondent's distribution according to age is shown in the table below.

<b>Age</b>	<b>Male</b>	<b>Female</b>
<b>20-29</b>	1	5
<b>30-39</b>	3	2
<b>40-49</b>	1	
<b>50-59</b>	2	3
<b>60-69</b>		1
<b>70-79</b>	1	1
<b>No. of Respondents</b>	8	12

*Table 6.1: Naminya sample population*

The size of the households ranges from between four with two adults and two children, to eleven, with three adults and eight children. Of the respondents, all except one female mainly working as a teacher, had farming as their main job. Of all the twenty households, 13 relied only on farming; three also had fishing as a livelihood activity and four were involved in other kind of livelihood activities: Teaching, work at sugar plantation and working as farmers for other people.

#### **6.4.2 Sampling in the Downstream Settlements**

The sample population in the downstream settlement was chosen through meetings with the local council and other people in the village with an overview of the population. The twenty respondents in the sample population were distributed as following according to age and gender, with ten female and ten male respondents, as shown in the table below:

<b>Age</b>	<b>Female</b>	<b>Male</b>
<b>20-29</b>	4	
<b>30-39</b>	3	3
<b>40-49</b>	1	1
<b>50-59</b>	1	1
<b>60-69</b>		1
<b>70-79</b>	1	3
<b>80-89</b>		1
<b>No. of Respondents</b>	10	10

*Table 6.2: Downstream sample population*

An interview conducted with a seventy-five year old woman was accompanied with her thirty-five year old son, because the woman experienced difficulty in understanding the questions and inhabited certain skepticism towards the situation. The interview of these two will be treated as one interview, representing the household, as it turned difficult to separate the views of the two.

Of the twenty respondents, fifteen were farmers. Two of the male farmers stated that they were originally unemployed, but that they were currently working as farmers. Of all the households, five were dependent solely on farming; eight on farming and fishing and seven were dependent on farming with at least one member of household in alternative wage employment.

### **6.5 Challenges Concerning Method**

One of the main issues that has been raised regarding qualitative research methods is the subjectivity which is often connected with a researcher using qualitative methods (Silverman 2001:25) and which is therefore not able to generate “objective” facts. But statements like this raise some important questions: What is objectivity and how is it obtained? And how can one are guaranteed objective answers from respondents? Advocates of qualitative methods points to how knowledge is constructed and can not be objective (Silverman 2001:34). The knowledge which has been extracted in the data-collection is based on the project-affected people’s own assessment of their livelihood situation, and must therefore be treated on these terms. Using an interview for this research is an important tool for catching the dynamics in livelihood strategies, which are not likely to be a static process, and which analysis will be built upon personal experience and knowledge. But the respondents and my own subjectivity are important to keep in mind, as it can have a certain impact on the data collection, the analysis and the presentation. The emphasis on the respondents’ own evaluation of their livelihood situation gives me as a researcher a challenge in deciding what status the data has.

In order for me to not decide the value of the response according to its objective “truth” I will view my analysis of the responses as a descriptive study of subjective responses to the interviews, aiming to critically shed light on the current and future situation of livelihood in the agricultural sector.

Being a researcher in a natural setting, especially one that is culturally different compared to my own, provided certain challenges. First of all, how does one defend spending other people’s time on something that in the short-run is only beneficial for me? How does one provide an incentive for people to act as respondents? The two different settlements were quite different in this regard: In the resettlement village there were no challenges in obtaining twenty respondents. The aim of the research was presented, and there were few questions asked, except for a small compensation to the respondents for the time they spent on the interviews. The respondents seemed to view this as a chance to express their views and concerns about the resettlement. A few male residents were a bit sceptical about allowing their wives to be interviewed, but this did not turn out to present further problems. The process of getting respondents in the downstream settlement was a bit more challenging. It required a meeting with the Local Council, consisting mainly of the village elders in addition to a few other men. They were first of all sceptical about allowing me to interview women, as they feared it would resemble a feminist awareness meeting. This was solved by not interviewing one woman after another, but randomly in between the male respondents. Secondly, five members of the local council required to be interviewed. This complicated the issue of the sample criteria, which was supposed to create diversity in age and socio-economic status. These were mainly elderly men and their socioeconomic status is likely to be a bit different from the other residents. One of the locals providing me with assistance and localising the different respondent claimed that the respondents from the Local Council exaggerated and minimised factors in their livelihood situation in order to make the situation appear worse than it actually was. If so, this was probably done in order to improve the situation for the settlement if there are made any efforts on behalf of the constructors to facilitate for development.

My role as a researcher was also somewhat misunderstood by some of the locals, despite it initially being explained. Several thought I was there on behalf of the construction company to assess their situation or that I could be able to assist them with challenges they were facing with land issues, loss of fishing, etc. This can have affected the replies from some of the respondents, as their focus on obtaining assistance to improve their situation might have been dominating their attitude towards the interview.

English is one of the official languages in Uganda, but I still decided to use an interpreter during the interviews, since many people do not speak very well English and to be able to use expressions that would be known to them in their local language *luganda*. Using an interpreter presented two main challenges during for my data collection. First of all, I have little control of the actual interpretation and the words that are being used. This can impact the replies during interviews. Secondly, external occurrences made it necessary for me to find a new interpreter. This also posed challenges concerning language: The new interpreter used different words and terms when translating. This made it difficult to draw comparisons between the settlements and to use the findings in the downstream settlement to shed light on the changes for the resettled households. Since the resettled households used to reside in the downstream area, the findings from there could have provided more data on the impact of relocation.

The types of questions were by some respondents perceived as being too personal, and they refused to reply. They were mostly questions I had not assumed would be too personal, but the respondents' reaction was probably also influenced by the situation and my role as a researcher and a foreigner. They might not have completely understood the aim of my research or felt that the situation did not promote the kind of comfort answering certain questions would require.

## **6.6 Validity and Reliability**

Validity and reliability is important for assessing what kind of status one should add to a data collection and is closely connected to the challenges presented above. *Validity* refers to whether the research actually measures what it sets out to measure, whether or not the result is able to represent the phenomenon of investigation (Silverman 2001:232). The degree of validity of this paper and research is dependent upon many factors. Silverman (2001:233) mentions three factors which have normally been indicators of validity: The impact the researcher has on the setting of the data-collection, the bias of the researcher and the status of the feedback from a respondent. When assessing the validity of this paper, all these three should be taken into account. First of all, I believe that I, as a researcher, have a certain impact on the respondents, and consequently their reply. Their reply can be affected by the fact that they view me as someone who can help their situation and that they thereby adjust their feedback according to what kind of help they believe their experiences can give. As mentioned above, one of the challenges in analysing the data was that it was likely that part of the feedback was not intended to display their situation, but rather to act as a signal for increased attention and assistance. My presence can also cause stress, as the respondents are not comfortable with displaying their livelihood situation to someone who they do not know and have not yet been able to build up a certain level of trust to. Several respondents refused to answer some of my questions. Second, my values can have had an impact on the result of the research, both when analysing the data and when concluding and putting the data into a context. My values can impact the way that I analyse what I *assume* the respondent referred to. Although one as a researcher tries to avoid it, the data can be influenced by the perception one has as a researcher regarding the issue at stake. Third, the replies from the respondents also create challenges, as it is difficult to know what kind of status one should add to their statements. Feedback from some of the downstream interviews did challenge some of the responses, as mentioned in the previous section. Silverman also suggests other ways of validating data: Comparing different types of data and to verify the findings by presenting them among the people one is studying for feedback. *Reliability* is closely connected to validity, and refers to the consistency of the data (Silverman 2001:225). For example, would another person reach the same conclusion if conducting the same research? Using interviews for extracting data thereby implies that the respondents have understood the questions in the same way and reply based on this common understanding.

## **Chapter 7 Empirical Findings**

### **7.1 Naminya Resettlement Village**

One of the main objectives of this research was to investigate the risks of impoverishment among the resettled project-affected people. This section will present the empirical findings from the data collection in the Naminya resettlement village. The findings are contextualised and systemised according to the theoretical findings presented in the third and fourth chapter, and the propositions generated from these which are presented in the *Theoretical Framework*. The findings result in a conclusion presents and how the findings correlate with the risks of impoverishment according to the four indicators from Cernea's IRR model.

#### **7.1.1 The Effects of Compensation**

The impacts on the resettled people are mainly caused by the physical alteration of the dam and the direct impacts on their assets. The first proposition suggests that compensation for lost assets will not lead to a restoration or improvement of the livelihoods of resettled people and that the resettlement process only relocates, not rehabilitates. The main findings from the Naminya resettlement village points in the same direction: The resettled population received compensation based on a survey of their assets, but the dynamics of the type of compensation they got and the site for the resettlement has not created favorable conditions for the population. The people and assets eligible for compensation among the resettled were identified through a census and evaluation in 2000 by the AESNP and relevant governmental institutions (R.J. BIL 2006:351). Project-affected people who had to be relocated from the construction-site could choose between two types of compensation-packages: A full resettlement package and a cash compensation package. The people who chose the latter would themselves be responsible for finding alternative places to reside, while the ones who chose the full resettlement package was relocated to the Naminya resettlement village. The resettlement site is situated some kilometers from the original settlement site, north of the Nalubaale/Owen Falls and approximately 3 kilometers from the West Bank/Kayunga road. The full resettlement package included a residential and agricultural plot, a house, agricultural inputs, cash for lost crops, disturbance allowance and cash for the costs of moving. In the resettlement village, there is a primary school for the children of the nearby Naminya village, a borehole and a clinic (R.J. BIL 2006:351). 34 households chose the full resettlement package and were relocated to the Naminya resettlement village in 2002, mainly from the West bank area of Kikubamutwe and Namizi. Most of this area has now been fenced off for the future construction.

Of the twenty respondents, seventeen were living in households that had received the full resettlement package. Of the three that did not receive the full resettlement package, one household chose materials and money to build their own house instead of being provided one, with the rest of the compensation being equivalent to what the rest received. The two remaining households did not receive a full resettlement package as one of the houses was not located by the survey, and was therefore not registered. The other household had been renting its former house. Both households were considered ineligible for compensation for their houses.

<b>Satisfaction</b>	<b>Respondents</b>
<b>Satisfied</b>	9
<b>Unsatisfied</b>	5
<b>Partly satisfied</b>	6
<b>No. of respondents</b>	20

*Table 7.1.1: Satisfaction regarding compensation*

Nine respondents expressed satisfaction concerning the compensation they had received, while five were not satisfied. Several issues were brought up as unsatisfactory: The houses were not adequate, the plot of land was too small and that the cash compensation they had been given for their crops did not reflect their real value. In addition, the compensation did not take crops that would take more than one year to grow into consideration. This left some people without compensation for the years it took to grow crops exceeding one year. Six of the respondents were partially satisfied with the compensation, but pointed to issues like the size of the agricultural plot, the quality of the house, cash compensation for the crops and land title issues as factors making them not fully satisfied with the compensation they received.

As suggested in earlier research, the cash compensation was mainly used for consumption and necessities, not for long-term investments which could restore or improve their livelihoods. Paying school fees was listed as one of the main expenditures prioritised together with buying necessities for the new houses. Another main expenditure was food: When they were resettled in 2002, there were no crops in the resettlement area ready to be harvested, and the resettlers had to buy food for consumption during the first period of settlement. Other things bought for the cash compensation was firewood, kitchen, cow, and an additional house, with the two latter being the only expenditures that can have long-term effects on the household. One respondent also claimed that her husband, who had been in charge of the cash compensation they had received, had spent it all on alcohol and other personal items, leaving nothing for the household. There is a certain possibility that this also occurred in several households, but that the female respondents would not provide this kind of information. The respondent who claimed this was widowed and would therefore not have to consider her husband when replying.

In addition to the compensation given to each household, there were also some facilities provided to the village as a whole: A clinic and a borehole. According to the respondents, they were also promised a school, but the school currently in use for the children of the resettled households was set up by the resettlers themselves. Some of the respondents pointed to how the clinic was not well enough equipped and lacked a full-time doctor and that the school was too small and also poorly equipped. According to some of the respondents, they had also been promised electricity, a promise which had not yet been fulfilled. This background, the planning and execution of the resettlement seem to have mainly taken care of the physical relocation of the project-affected people together with physical compensation, providing little additional support or facilities that would restore or improve their livelihoods and to counteract the negative impacts the resettled people have experienced.

### **7.1.2 Status of Assets**

Proposition number two suggests that resettlement will affect the assets the livelihoods depend upon. For the resettled in this project, natural and financial assets seem to have been adversely affected for the most part, and the impact on their financial assets is highly affected by the impacts on the natural assets.

The plots they were given in the compensation package had not earlier been cultivated by other residents, and are situated on the outskirts of another village. Most of the respondents classified the land they had been given as their own land, but after further inquiries, it turned out that only about one half of the people in the village had actually been given the legal title to their land. One respondent also rented an additional piece of land. This might also have been the case for several of the respondents, because during a case study with one of the resettled families, it turned out that they as well were farming a rented plot of land in addition to the land they had received. This was not stated in the initial interview. It might not have been mentioned it because it was only temporarily and not regarded as part of their land. One of the respondents claimed that a piece of their land had been taken from them after they had signed the contract and that they were therefore worried that they could loose even more land. Another respondent, who had not yet received the legal land title, expressed concern regarding the risk of loosing their plot of land, despite the fact that the land was regarded as theirs. Issues with the legal land title regarding compensation have been prevalent in many similar projects. However, it does not seem to have as severe repercussions in this project yet as they all could cultivate the land they had been given.

Experience from similar projects point to how the land the resettled receive as compensation have different characteristics compared to the former land and that the changes are usually adverse. Sixteen respondents experienced no change in the distance to their plot of land, while one was given a plot that was further away than before and two were given plots that were closer than in their previous settlement. The distance to the land the respondents had been given can therefore not be said to have a general negative impact on their livelihood situation.

<b>Status</b>	<b>Land Size</b>	<b>Land Fertility</b>
<b>Improved</b>	5	3
<b>Worsened</b>	11	11
<b>No change</b>	4	6
<b>No. of respondents</b>	20	20

*Table 7.1.2: Quality of land*

As suggested by the WCD and IRN, the quality and size of the new plots of land have worsened. Eleven respondents claimed that the amount of land they had received as compensation was smaller than their previous plot of land, while five claimed that the plot they had received was bigger than the one they had in the previous settlement. One of the respondents used to rent out parts of his land, but the land he had received as compensation was too small, leading to a loss of income compared to the previous settlement site. Four people saw no change in the amount of land they had been given compared to their earlier plot



of land. Three of the respondent claimed that the land they had received as compensation was more fertile than their former land, while eleven claimed that their land was less fertile and one said that *“the crops are not growing the way you expect”*. Six of the respondents had not recognized any difference in the quality of the soil, although one respondent had problems with stones in the soil. The reduced fertility of the soil was by some explained by the topology: The new plots are situated in hill, causing problems of erosion. Others pointed to the problem of weather, by either being used to having their former plot in a wetland, or that the soil quickly dries out because of too much sunshine. The size of the land, together with the quality of the soil, the weather and the amount of labour put into it, determines the outcome of the soil. Most of these plots therefore produce fewer yields than the plots of land the respondents cultivated in the previous settlement.

<b>Change</b>	<b>Fishing</b>		<b>Agriculture</b>	
	<b>Economic income</b>	<b>Consumption</b>	<b>Economic income</b>	<b>Consumption</b>
<b>Increased</b>			3	4
<b>Decreased</b>	15	15	16	12
<b>No change</b>				1
<b>Variation</b>				3
<b>Not Applicable</b>	5	5	1	
<b>No. of Respondents</b>	20	20	20	20

*Table 7.1.3: Outcome from fishing and agriculture, for sale and consumption*

The resettlement has also affected their financial assets, especially through the impact on natural assets. The fifteen households that had been involved in the fishing industry before the resettlement, or still are, all reported that both their economic income from fish and the amount of fish for consumption had decreased. Most respondents point to accessibility as the main factor that currently prevents them from fishing or reducing the amount of fishing and that there are no nearby sites for fishing. The area they used to live in is situated next to the river and has been fenced off. Their previous fishing sites and landing sites for boats are therefore not accessible. The area is guarded, and one of the respondents claimed that in order to fish there, the guards would have to be bribed, either with fish or money. Another respondent claimed that the guards could confiscate their boats and that they would be chased away and they had threatened with imprisonment. Alternative sites for fishing were said to be too far away, and on the eastern bank of the river they would need a permit for fishing. The resettlement village is relatively far from the main road as well as from potential fish sites, and there is no transport to access the main road to get to these sites. Transport from the main road to fishing sites was therefore considered too expensive and difficult. One of the respondents, whose husband was still a fisherman, claimed that it currently was a one to two hours walk to the fish site. The loss of access to fishing not only deprives the affected people of food and economic income: It also makes human capital, in terms of knowledge redundant, without being compensated with other livelihood activities.

Sixteen respondents said that the role of agriculture in the previous settlement was both for consumption and for selling; while four said that it was for only consumption. In comparison, twelve respondents said that the role of agriculture in the current settlement was both for consumption and sale, while eight said that it is for consumption only. Nine out of the twenty households experiencing a change went from agriculture for both consumption and sale to consumption only, while three went from only consumption to both consumption and sale. Eight households experienced no change in the role of agriculture in their household. This means that a majority of the resettled are no longer getting income from their main asset.

Consequently, sixteen households reported decrease economic income from the sale of agricultural products. This trend can probably be explained by the fact that nine of these respondents were no longer selling their agricultural products, but only producing for consumption. Three respondents reported that the economic income from selling their agricultural products had increased, all of whom had only produced for consumption in the previous settlement, turning to sale after the resettlement. Twelve respondents claimed that the agricultural output for consumption had decreased, while four claimed that it had increased. One claimed there was no change, while three said there were variations in the agricultural output. One respondent who had experienced a decrease in agricultural output for consumption pointed to an overused soil, but the changing weather conditions was pointed out as the main factor contributing to varying yields. One of the respondents who had experienced an increase in agricultural output, pointed to a more fertile soil in the resettled area compared to the former area of settlement. However, the change in agricultural output can also be explained by external and non-dam related influences: One of the respondents mentioned that the yields were lower because her husband had moved away and the labour force was therefore smaller.

The respondents were asked about access to a market for selling their products from fishing. Four of the six respondents still working in this sector replied that they no longer had any products to sell at the market, while two pointed out that the market was not easy accessible because of distance. Physical assets, like infrastructure, have not been facilitated to ease the resettler's mobility. There were similar responses when they were asked about their current access to a market to sell their agricultural products. Many respondents pointed to distance, combined with no transport, as a major problem. Two methods were mentioned for getting goods to the market: Pushing a bicycle with the goods or carrying the goods on their heads. Both were considered to be difficult and physically heavy. One of the respondents had experienced sickness lately and was therefore not able to get to the market with his products, as his physical strength had diminished.

The respondents were asked about what they considered to be the current main challenges in the agricultural production and the responses were quite varied. Some factors pointed directly to soil-issues, that it was difficult to get crops to grow, drought and the weather not being suitable, having stones and weeds in the soil, bad quality of the soil and that the soil was hard, making it difficult to dig. Other factors were theft of crops, shortage of land and insects destroying their crops. The land they had been granted also provided some problems in handling their livestock properly, since there was no proper place to keep their animals. Some respondents also mentioned the expenses of food for the pigs as well as knowledge about how to keep them properly as challenging factors. Others pointed to the fact that the soil required more work than they were used to and that it was difficult to access a market with their agricultural products.

### **7.1.3 Employment**

The terms “job” or “employment” can create some different perceptions in this context, as many of the respondents are not wage labourers or in a line of work that creates economic income. One of the respondents, a self-subsistence farmer, pointed out how she did not consider that line of work as employment. But in this thesis, being a farmer or involved in the fishing-industry for self-subsistence will be defined as having a job, or being employed. This will allow me to establish and compare livelihood supporting activities.

Findings from earlier empirical research are somewhat contradictory: Resettlement is said to both increase the employment opportunities and to lack opportunities for employment. The employment opportunities and the possibility for new livelihood activities have for the resettled people in this project decreased, especially since the opportunities for self-employment in the fishing industry has largely been removed. The respondents also see few prospects for wage-employment in other sectors. As mentioned earlier, all respondents and their respective households are partly or fully dependent on farming in sustaining their livelihood in the current settlement area, through either parts of or the entire workforce of the household being involved in farming. One household had one member working at the nearby sugar plantation. An inhabitant claimed in a spontaneous talk that working at the sugar plantation was not desirable: Working there was bad for the skin and people find it difficult to accomplish the tasks they are given. Two households had members working on other peoples plots, while two were teachers. Most households also had livestock: Goats, hens, ducks, turkeys, and a few had cows and pigs. The distance to the main road and the cost of using public transport limits the possibility of traveling in order to find odd or regular jobs. Many respondents also points to lack of electricity and capital as means towards setting up their own business. One mitigation measure of the dam proposes developing fisheries, especially upstream and in the impoundment, which could offer the resettled people a possibility of employment. According to previous empirical research, this can counteract adverse impacts, but it would require improved infrastructure. Of the 20 respondents, only five experienced no change in their line of work compared to before the resettlement. But of these five, two of them had lost the opportunity to grow cash crops in the resettlement area, constituting a change in the way they sustain their livelihoods and influencing their economic income. There are also limited amount of possibilities of expanding the agriculture production, since the size of land is small and there is no capital to start up further production, like an expansion of livestock.

Of the fifteen households that were dependent on fishing, eleven are no longer involved in the fishing sector following the resettlement. Three households are still involved in the fishing industry but less extent then in their previous settlement. This means that only one of the households is involved in the fishing industry to the same degree as it was before the resettlement. Six of the respondents answered the specific question on whether or not there were alternative job opportunities in the fishing sector. The replies can be divided into two: Three respondents claimed that there were no or only a limited amount of jobs, while the remaining three pointed to the possibility of self-employment in the fishery sector. This involved buying fish for selling at the market, of which they can make a small profit. But two of these respondents pointed to a lack of capital to start this kind of business. One respondent said there were no jobs, but that he “*would like one*”.

The resettlement area does is not compatible with the area in which they used to live in terms of livelihood activities opportunities, although the indigenous locals does not appear to be a

factor as suggested in the theoretical framework. The resettled resides in an area which has not been previously inhabited. There is apparently no competition regarding resources or employment, although one respondent claimed that a sense of common community had not developed with the neighboring residents, it was a “*failed relationship*”, a relationship which could facilitate improvement had it been reversed. Through an increased social network, the possibilities for livelihood activities could have increased.

#### **7.1.4 Livelihood Activities and Diversification**

The fourth proposition propose opportunities for livelihood diversification in a resettlement process, which could have helped the resettled by spreading the risk and strengthening the possibility for increased economic income. But the situation, as it is now, shows few possibilities to rely on more than one source for sustaining their livelihood. It is first of all because of the status of their assets. The amount and availability of natural assets have decreased: The agricultural output for a majority of the resettled has lowered and it has become harder to access fish-sites. Most respondents have livestock of some kind, usually in a small scale, like hens, but a few has a large livestock which could increase their economic income. As mentioned, some respondents that had started pig-raising after the relocation complained about expensive food for the animals and a lack of knowledge about pigs. The site also place physical restrictions on relying on livestock on a larger scale, especially because of lack of places to keep them, in addition to financial hindrances in acquiring the animals. The access and output of natural resources influences the financial capital of the respondents: Nine respondents no longer sell their agricultural outputs, and most of the ones who still do have experienced decreased income. The same tendency is prevalent among respondents who were dependent on fishing earlier. For the respondents that sell agricultural products, accessing the market is the biggest challenge. The cost of transportation is high and the markets are located far away. The physical capital for the resettled does not include immediate access to public transport or other facilities that would make it easier to sell their products, like a local market. In addition, the amount of cash crops, like coffee and vanilla production, has decreased. The alternative option of buying items from others in order to sell to a third party is possible, but costly. Their income is therefore mainly based on small yields from agriculture, if they get income at all, leaving them with a low level of economic diversification and therefore resilience towards adverse impacts.

The respondents were asked to assess their household’s ability to cope with changes that would negatively affect them in order to investigate if they would be able to diversify and strengthen their economy and livelihood situation should it be necessary. Most respondents expressed a somewhat pessimistic view of their ability to cope with changes, that there was little to do and that hunger and death would be the result. Most of them pointed to their lack of food and money savings that could assist them in periods when there was no income or crops. Many also pointed to family and/or friends offering assistance, but that “*they help only once or twice*” or who lived too far away to be of any assistance. One respondent replied that if they did not get any food, they would not have the energy to work, resulting in a downward spiral. The respondent working as a teacher said that the salary from teaching would not be enough to compensate for loosing their original source of food from their own plot. One respondent initially said that the household did not have any proper food storage, but mentioned that they did have a small storage of cassava, a plant where the root is used for food. This fits well with the general observation in the village. It showed that many households were drying cassava outside their houses and the case study provided an

explanation for this and the use of cassava: Fresh cassava has to be eaten within a few days, but if it is dried, it can be smashed or taken to the mill, and be stored as powder to be used in porridge. Cassava was also told to be highly resilient to drought, and could be stored in the soil after it is ready to be harvested, a “*natural storage*”. It was therefore said to be important in dry seasons. One respondent claimed that their vulnerability towards change was a critical point in their livelihood situation, but that being provided with electricity would probably reduce this vulnerability, as it could lead to opening of businesses in the village. Such diversification would leave the villagers less vulnerable to changes in one sector, since they would have something to fall back on. Another respondent mentioned the possibility of working at the nearby sugar plantation if the situation required them to, while a third respondent said that the way out of a possible crisis would simply be to work harder on their own soil. One respondent saw the possibility of plaiting hair for others, being skilled in that profession, but she had no starting capital for equipment. Most respondents have not attended school beyond a primary level and regarded employment elsewhere as challenging.

Their economy and livelihood activities were clearly more diversified in the previous settlement: The fish catch had been higher despite problems with their equipment, flow-regime and weather. Many experienced crop diseases, theft of crops, problems with the weather and low prices because of overproduction in the agricultural sector. But despite these problems, the respondents were still able avoid impoverishment. Their economy and livelihood activities were more diversified, and they could depend on other crops, other sectors or storage if they were adversely affected. The main obstacles for the resettled themselves being able to diversify their livelihood situation after the relocation seem to be the status of their financial and physical assets in their surroundings together with few external opportunities, which could compensate for the loss of their previous assets and restore and improve their situation. Without financial assets it is difficult to get capital for entrepreneurship and setting up a new business. In short, they have no money to obtain employment and there is no employment to generate income. The cash compensation was, according to most respondents, used for basic necessities when they were relocated, and only a few had the opportunity to use it for diversifying their income. The physical assets, especially infrastructure, limit the possibility for improvement through external sources. The location of the resettlement site and the number of inhabitants is also a hindrance for a profitable business *per se*, since a potential market is limited.

### **7.1.5 Concluding Remarks: Landlessness, Joblessness, Food Security and Marginalisation**

Most of the issues presented above are somewhat interrelated and has degree led to a relatively high impoverishment among the resettled according to the four components in Cernea’s IRR model presented in the fifth proposition. As suggested by the WCD, the new site is not compatible with the old site and the livelihood situation and outcome has been adversely affected.

If the findings from the resettlement village are assessed according to Scudder’s four types of outcome (Scudder n.d.:9), one can argue that it resembles the fourth outcome he presents: Worsened living standards for the majority without improvement. This does not mean that there is no room for improvement, but rather that the adverse impact has not been counteracted so far. The findings clearly points to how both *land issues* and *job issues* have been affected by the resettlement. It has not led to landlessness, but the situation has

deteriorated in terms of land issues. This means that the respondents’ ability to utilise farming for livelihood activities has lowered and thereby reducing the income. Land issues are one of the main factors contributing to less income as there are fewer crops to sell. Their financial assets have also been affected as their ability to fish has drastically lowered. Alternative wage employment in the area is limited and has therefore not been able to counteract the adverse impacts on the opportunities for employment. de Wet claims that compensation that is divided into both cash and housing has shown to be successful. But this has not been the case for this project, as the cash has not been able to secure a sustainable livelihood for the locals, but rather only increased their consumption for a limited period of time.

The *food security* situation as well has worsened as a result of the resettlement, and this is largely a result of the status of assets and employment opportunities. The respondents were asked to assess their food security situation and whether it has changed compared to before the resettlement.

<b>Food Security</b>	<b>Former Settlement</b>	<b>Current Settlement</b>
<b>Good</b>	17	6
<b>Bad</b>	1	12
<b>Not Applicable</b>	2	2
<b>No. of Respondents</b>	20	20

*Table 7.1.4: Food security*

Seventeen respondents claimed that their food security situation was good in the previous settlement, as compared to six in the current settlement. Only five of the respondents experienced no change since the resettlement and assessed their food security situation as good in both settlements. Several respondents claimed that they eat less food now than they did before, while only one experienced eating more now as compared to before the resettlement. One who experienced a worsened food security situation said that the money from the compensation had been of assistance for buying food, and despite a worsening, he was still content with the situation. There seemed to be a general tendency among several respondents that they had to work harder than before to obtain food, which would still be less or the same amount as in the previous settlement. The reduced size of the agricultural plot and over-utilisation of the soil was also mentioned as part of the explanation for the lowered food security, as the reduced output gave less food for consumption and income and the buying of food is expensive. The amount of time it took the crops to grow was also mentioned as a reason for less food than in the earlier settlement, and can probably vary according to the seasons. The respondent’s food security situation is probably also defined according to their type of diet. Several respondents mentioned how their current diet was more monotonous than in the previous settlement, as they mostly eat cassava, and have less access to food that could help vary their diet, like fish.

The *marginalisation* among the resettled is not unambiguous: The level of marginalisation depends on their previous and current livelihood situation, the possibilities inherent in their situation, how they perceive their own situation and priorities. In addition, the process and state of marginalisation is a result of a myriad of factors and the dynamics between them. What seems to be the main overarching factor determining the level of marginalisation among

the resettled is the *limited amount of possibilities* the new settlement offers, inhibiting the ability of the resettled people to restore or improve their livelihoods.

The findings presented earlier in this chapter have been especially relevant for causing the level of marginalisation that the resettled have experienced, especially through the impact on natural and financial assets and the connection between these. The majority of the respondents have experienced a loss of economic power. Their income has declined and they have not been able to use the compensation to rebuild the status of their asset. Especially the resettled site's geographical location limits the possibility for employment, odd jobs and self-employment, as there has not been provided any means to counteract the effects this has had on the local livelihoods. Losing the access to fishing leaves knowledge they have acquired redundant. Their agricultural plot limit their possibility to generate an economic income which could strengthen their economic situation, and for those who have the ability to sell parts of their agricultural products, the access to a market is challenging, difficult and time consuming. The fact that about half of the respondents has not yet received the land title for their plots seem to lead to psychological marginalisation, as it deprives them of the feeling of being in power of what is considered as their own assets. In addition, the general inability to diversify their economy leaves them even more vulnerable in economic terms, with the possibility of adversely affecting the livelihood situation further. Although several respondents pointed to issues with their new house as being unsatisfactory, others mentioned their new house as a great improvement compared to houses in their previous settlement. Most people lived in primitive houses, with grass-thatched roofs, in the previous settlement, while the new houses are stone-brick houses. This seems to have had a positive psychological impact on many respondents.

The respondents were asked how their livelihood situation had changed in general; whether it had improved, been restored or worsened. Sixteen respondents claimed that it had worsened. Three respondents said that the situation was getting better, and another said that despite a worsened situation, it was still not too bad. One respondent said that the situation was the same as before the resettlement, except for the lack of trees for the animals and the slow yields of fruit trees and one respondent claimed that as long as the weather was good, the farming was better than in the former settlement. A third respondent claimed that the situation had neither worsened nor improved, but that "*certain things were good whilst others were bad*".

The level of marginalisation among the respondents can be illustrated with the factors the respondents said were the greatest influence on their livelihood. Most respondents pointed to farming, and factors that would influence farming, like the weather, seasonality and size of land. For some, the ability to sell agricultural products was important, while for others the inability to sell their products was an influencing factor. Other than farming, fishing and income, or a lack of such, from wage employment were regarded as important influencing factors by a few respondents. A few pointed to the general condition of being poor, by for example lacking medicine as a highly influencing factor. One respondent mentioned help in terms of expertise they had received from NGOs as influencing their livelihood situation. The relevance of what the respondents consider as influencing factors on the level of marginalisation is their emphasis on factors that are either lacking, limited or that are vulnerable to external influences and which has contributed to their level of marginalisation. What they have in common is that they are largely outside the control of the resettled people, who are at risk of a sense of powerlessness over their own situation.

In the majority of the cases presented in the literature review and the empirical data from the resettlement village, resettlement has not led to a restoration or improvement in the livelihoods of the project affected people, but rather to impoverishment. Impoverishment on the basis of the four components of Cernea’s IRR model is quite clear. But also the respondents themselves classify their poverty situation as being worse now than it was before the resettlement. Many of them also point to factors that are the same as the components of the Cernea’s IRR model.

Farming was considered essential and several respondents defined poverty through challenges in the agricultural sector: That there are no crops, no market or low prices on crops, how the weather can disrupt the crops and that the agricultural plots are too small. Some respondents also pointed to the lack of basic needs, like water and food, and characteristics of their household: Having a small house or that being widowed creates such challenges in the everyday life day that it leads to poverty, as challenging. But most respondents defined poverty in terms of income and employment, or the lack of such: Having no money and no income, nothing to do and no employment was considered as poverty, or would eventually result in poverty. One respondent also pointed to how relying only on farming constituted being poor, “*since one could not really do anything*”. This definition is most likely based on the experience of such farming that is most prevalent in the resettlement village: Self-subsistence, which does not create a strengthened economy facilitating further investments. A few respondents also pointed to the lack of assistance as a feature of poverty, making the people vulnerable for change and poverty.

<b>Poverty Status</b>	<b>No. of Respondents</b>
<b>Very poor</b>	3
<b>Poor</b>	13
<b>Not poor</b>	2
<b>None of the above</b>	1
<b>Not Applicable</b>	1
<b>No. of Respondents</b>	20

*Table 7.1.5: Poverty Status*

The respondents were asked to classify their household’s current poverty status and twelve classified their household as very poor. One said that “*poverty is high*” and another claimed that he “*always had 10000 shillings in his pocket*” in the previous settlement, while he now “*don’t even have money for a cigarette once in a while*”. Three respondents classified their households as poor. One respondent said that the household did not have enough money; another said that the household was neither poor nor rich, while two said that their household was not too poor. Some of the respondents who classified their household as being very poor pointed to factors like lack of money, no work and that they no longer had things to sell as contributing to the poverty status. One respondent classifying the status as poor mentioned that they fail to get basic needs met, while one of the respondents classifying its household as no too poor pointed to their assets as contributing to their poverty status, their assets being two cows and two pigs. The respondent saying that the household did not have enough money when classifying the poverty status, mentioned disturbances to crops, that they had to buy



expensive crops and the well-being of the children: They did not eat well and “*don’t enjoy life*”.

<b>Poverty Status</b>	<b>Response</b>
<b>Increased</b>	17
<b>No change</b>	1
<b>Varying</b>	1
<b>Not Applicable</b>	1
<b>No. of Respondents</b>	20

Table 7.1.6: Change in poverty status

Most respondents claimed that they had been poor to a certain degree in the previous settlement as well, but seventeen had experienced further impoverishment after the resettlement. One respondent had not experienced any change in poverty status and one said that the poverty status varied.

**7.2 Downstream Settlements**

This research aims at investigating and assessing the livelihood situation of the downstream population in order to see how they have been affected by the dam so far, their current livelihood situation and how the potential effects of the dam can impact the local livelihoods. This task is especially challenging because of the following factors: The dam has not yet been built and the environmental impacts and the effects on the local livelihoods are therefore based on prediction and assessment. Second, predicting the impacts is complicated by the fact that downstream effects are a result of environmental dynamics. Exactly how the livelihoods will be affected therefore eventually depends on the actual effects of the dam and how the community and households are able to cope with potential changes when the dam has been built.

But there are some general downstream effects that have been prevalent in many dam projects. The presentation of the empirical data from the downstream settlement will be contrasted, compared and systemised according to the empirical findings from previous research stated in the proposition in chapter three and four and the propositions these have generated. The findings will be concluded according to the four components in Cernea’s IRR model: Landlessness, joblessness, food security and marginalisation, to investigate whether the environmental effects have the potential to also affect these factors in the downstream settlements.

**7.2.1 Location**

The downstream settlements investigated in this research are mainly located west of the West Bank/Kayunga road and between the West Bank/Kayunga road and the river. The settlements between the river and the road are situated a couple of hundred meters from the river bank and

the area closest to the river is dominated by both cultivated and non-cultivated plots of land. The first five interviews took place in the area between Kikubamutve and Nakwanga, which is partly next to the fenced off area of the construction site and partly in the immediate downstream of the proposed dam. The remaining fifteen interviews were conducted somewhat further down, in the villages of Nakwanga and Wakisi.

**7.2.2 Compensation**

Previous empirical research and practices in dam construction projects shows that adverse downstream impacts have not been compensated and the first proposition suggest that the downstream population will not be compensated for their losses. In the Bujagali Hydro-Power Project, the Physically Displaced People who were living next to or in the construction site have been given compensation and/or been relocated. The people living downstream or in the near proximity of the construction site have not been considered for relocation, but can be considered as potential Economically Displaced People, as the dam might affect their economic income, directly or indirectly.

<b>Impact</b>	<b>Response</b>
<b>No Impact</b>	13
<b>Lost Part of Land</b>	3
<b>Lost Land</b>	2
<b>Resettled</b>	1
<b>Not Applicable</b>	1
<b>No. of Respondents</b>	20

*Table 7.2.1: Impact on land.*

Five respondents in the downstream settlement received compensation for losses resulting from fencing off the construction area, because of the extent of the impacts they were exposed to. Three received cash for land and two received cash for land and compensation for loss of house. The three former respondents had not lost their house as a result of the fencing. They were not resettled together to the Naminya resettlement village, but still live in the near vicinity of their previous settlement.

<b>Response</b>	<b>Respondents</b>
<b>Satisfied</b>	1
<b>Unsatisfied</b>	4
<b>Not Applicable</b>	15
<b>No. of Respondents</b>	20

*Table 7.2.2: Satisfaction regarding compensation*

Only one respondent claimed that the compensation was satisfactory. Another claimed the same, but questioned the sum; “*were they cheated*”? Two claimed that the cash compensation for the land was less than the plot was actually worth, but they “*had no option*” than acceptance. One claimed that he had problems purchasing a new piece of land with the cash compensation he had received, as the local land-owners knew he had received compensation and therefore raised the prices. This respondent also said that the quality of the soil in the new plot was better than the former one, with increased yields, but that as the soil is used further, it will deteriorate.

The loss of assets among the compensated people does not seem to have had a major impact on the livelihoods in question. But it did have a moderate impact on their economic income and food security, which will be presented below. Their physical assets were compensated, although to different degrees of satisfaction. Two respondents used the cash compensation for building new houses and one of them also used it for school fees. One respondent claimed that the loss of land had caused suffering, and that it had not been worthwhile, despite the compensation. Two respondents used the cash compensation to build new business and thereby generate income: One had built an additional house, creating a new base for income by renting it out. The other respondent used the cash compensation to buy a car and becoming a driver as an alternative source of income. However, it is unlikely that the downstream settlements will receive further compensation for loss of assets, which the dam has the potential to lead to. For example, the loss of access to fishing is not defined as loss of personal assets, but rather as an indirect consequence of environmental effects and is therefore not likely to receive individual compensation. This will leave those dependent on the affected assets without means to secure alternative activities. The constructors claim that they will facilitate access to fish sites for the affected populations, and this could be required in order to counteract negative impacts.

### **7.2.3 Assets**

The second proposition suggests that the dam will affect the assets the population is depending on. The respondents that lost natural assets in terms of land and was considered eligible for compensation was presented in the section above. But previous empirical research suggests that the dam will impact the locals further by affecting the natural resource base, and thereby impacting them indirectly. The locals are not likely to get compensated for this, as mentioned above. All households represented in the sample population rely on natural capital for sustaining their livelihoods: Fishing and/or agriculture, either for consumption, or both consumption and sale and “*many people plan their day according to the river*”. Seventeen households own their own plot of land, two both owns a piece a land and rents a plot in addition, while one respondent is keeping and working on someone else’s land. Eight households also rely on income from other kinds of jobs.

<b>Role of sector</b>	<b>Agriculture</b>	<b>Fishing</b>
<b>Consumption</b>	12	3
<b>Consumption and sale</b>	8	5
<b>Not Applicable</b>		12
<b>No. of Respondents</b>	20	8

*Table 7.2.3: Role of sectors*

Eight respondents said that the role of agriculture is for both sale and consumption, while for the remaining twelve households it is for self-consumption only. Four of the eight respondents, whose households are selling parts of their agricultural output, claim they are selling their output when they are forced to because of lack of money, or because they have a surplus and are therefore not originally cash crops growers. In addition to all being in the agricultural sector, eight households are currently in the fishing-industry. Seven are self-employed, while one is both self-employed for self-consumption and wage-employed. Five households are fishing for both sale and self-consumption and three are fishing for only self-consumption.

Natural and financial assets are also listed as the most influencing factors on their livelihoods, especially the natural assets constituting agriculture and fishing. They are important for both consumption and sale, together with the weather, because of its ability to affect the natural resources. Financial assets, stemming either from their natural assets, wage employment or odd jobs, are also considered major influential factors, either because it is an important source for livelihood sustainability or because the household lack it. The natural assets are the most important source of economic income, either from selling agricultural products or fish. Water for domestic use is also a vital asset *per se*. The river is the main source of water for all activities in the households, for instance like drinking and washing. The settlements have a few boreholes which provide alternative sources of water.

The respondents were asked whether their fishing or agriculture activities had been affected by the dam so far and three respondents replied that they had been forced to stop fishing because the area where they used to go fishing had been fenced off. One of these respondents had been renting out boats to fishermen, while the remaining two had been fishing. This affects the financial capital the respondents have relied on, without receiving compensation for their losses. Three other respondents said that fishing had declined, but that this was because of the lowered water level, caused by the water level in Lake Victoria and the Nalubaale and Kiira dams. Two respondents experienced a negative impact in the agricultural sector. One had his chickens eaten by other animals, because the fenced area was no longer cultivated and had turned into a bush. Both respondents had lost land in the fenced off area, but had been compensated. These negative effects in the fishing-and agriculture sector were all claimed by respondents who used to live next to the fenced off area, and are probably the reason why the same negative effects were not reported by other respondents.

When asked about general *future impacts* from the dam on the fishing sector, several respondents said they were worried that they would no longer have access to fish sites and landing sites and therefore not being able to do any fishing. One respondent claimed that finding alternative sites for fishing would not present a problem. Some were also worried

about whether the fish would be contaminated, resulting in no buyers and no income. On the other hand, several respondents saw a decrease in the amount of fishing and fishermen as something beneficial, since that would lead to a smaller fish catch and an increase in prices, as the amount of buyers would be the same. But it would all depend on the availability of fish. Few people worried about the impact on the agricultural sector, as the farming is not based on flood-recession practices. One said the machinery might affect the soil, while another one said that decreased water levels would adversely impact the crops close to the river. Many respondents expressed a deep concern about the water quality and how it could affect the water consumption in their household. They were especially concerned of how the construction period would contaminate the water and that there were not enough boreholes which could replace the river as their main source for water.

According to previous empirical research, the two major downstream effects from dams are changes in the flow regime and fisheries, which has the ability to impact the assets and general livelihood situation of the locals. But the potential change in the flow-regime is not likely to have an impact on the agricultural sector for the Bujagali downstream settlements: Not only is the changes in the flow-regime expected to be limited, but respondents were asked whether their agricultural production was dependent on the river, on which most replied no. Five respondents mentioned how the wind would bring water to their plots from the river, which could be important during dry season. Only one respondent said he was watering his crops with water from the river. The river is not likely to be left completely dry because of the dam, which is rather an issue depending on the water level of Lake Victoria and the flow regime according to Nalubaale/Kiira dams, and can not be considered to be a threat to the sustainability of the local farmers. If the water is contaminated, this might affect the crops of the few respondents relying on watering or moist from the river, but this direct impact has not been mentioned in the assessment of the effects of the dam. Although the construction site has been fenced off and affected people have been relocated or given compensation to buy an alternative piece of land, agriculture in the near proximity of the construction can be affected. The construction requires large machines, accompanied with the proper infrastructure, and several locals were worried about how this could affect their plots of land. The construction itself might generate dust, waste and noise which can affect both the nearby agricultural plots and livestock. The dam also presents a risk of erosion which can adversely affect the agricultural plots and previous empirical research points to how this has led to useless agricultural plots. Despite this, landlessness and the loss or reduction of natural and financial assets regarding agriculture is only likely to have a minor impact on local's ability to sustain their livelihoods.

The impact on fisheries is more likely to have an adverse impact on the local livelihoods. The respondents mainly worried about the contamination and loss of fish together with restricted access to fish sites. Previous empirical research suggests that access to fish sites will be limited. Second, biological productivity can be altered. The fish population can be affected both directly and indirectly, with the possibility of complete loss of species. This has the potential of disrupting the self-employment among the people in the fishing sector. Specific effects recognised as being relevant for the Bujagali Hydro-Power dam are impacts on fisheries, but this is expected to only affect the fish habitat and catch during construction. Downstream impacts are, according the SEA by Burnside, expected to be unnoticeable. However, the access to fish sites has already been, and can still be further affected. Upstream landing sites will be closed permanently and landing sites on Dumbbell Island will be unavailable during construction. The dam is therefore likely to have an impact on three types of assets: Natural, financial and human capital. The first can be altered through losing access

to fish sites and therefore a reduction in fish catch, while the second can be indirectly affected through loss or limits in fish catch through impacts on the fish population. Human capital in terms of skills and knowledge can be left redundant if the locals are not able to perform their profession. However, previous research has also pointed to the opportunities that arise in relation to such construction. Fisheries can be developed in the dam reservoir, and substituting the loss of access to fish sites in the area around the facility and downstream. If this is facilitated, it can contribute to counteract the negative impact on the local livelihoods relying on fishing.

The five respondents whose household were dependent on selling fish were all asked whether their access to a market was likely to change as a result of the construction of the dam. First of all, the interview gave some contradictory feedback on their current access to a market, as one said it was close and another said it was far away. They might not be using the same market, or using different means getting there or simply defining distance differently. The respondents were not worried about whether the access to a market would change, but rather that they would have no products to sell: If their access to fish sites was removed or the fish catch decreased, they would lose their ability to get economic income from fishing.

#### **7.2.4 Livelihood Strategies**

Livelihood strategies constitute the choices and actions people undertake in order to produce the best possible livelihood outcome. The livelihood activities are mainly decided by the opportunities at disposal, needs, assets, human capital and restrictions imposed by external forces.

All respondents are in the agricultural sector, of which eight are also in the fishing sector. But there is a relatively high degree of economic diversification among the respondents, with eight households relying on other sources for employment and income, in addition to farming and fishing: Teaching, construction, driving, and odd jobs at other peoples' plot, trader, music, service-industry and mechanics. This lay the framework for the livelihood strategies the locals are able to undertake. The economic diversification is a major part of their livelihood strategies, but can be the result of different factors in each household.

Proposition three suggests that the livelihood strategies of the locals will be affected as a result of the dam. According to the *Sustainable Livelihoods Framework* presented in chapter five, the vulnerability context and assets are two of the main factors impacting livelihood strategies. In order to establish their vulnerability situation and the impact of their livelihood strategies, the respondents were asked about what challenges they were facing now and how they would assess their household's ability to cope with a lowered agricultural output. Most respondents pointed to the weather, the soil quality and the size of their plots when asked about challenges in their agricultural sector and that the "*crops don't turn out the way they should*". The weather is mainly challenging in the dry seasons, when the sun burns the crops, with no possibility of watering them. "*Dry seasons makes you redundant*", because the production is low. According to an informal interview during the downstream case study, there are big differences in livelihood situation according to whether it is rainy season or dry season. During dry season the household lack both vegetables and money, while in the rainy season, they have "*good lives*" and work more with more output. Two respondents specifically mentioned the lack of an irrigation/watering system, which could be beneficial in dry seasons. Several respondents also experienced soil exhaustion lowering the crop output.

Some respondents said that their plot of land was too small, while one pointed at crop-diseases, reducing the yields. One respondent experienced theft from his plot of land, since it was situated far away from his residence, and another respondent referred to a lack of energy to cultivate the land as challenging. Only two respondents experienced no severe challenges in the agricultural sector, and one did not respond to this query. Most respondents assessed their ability to cope with negative impacts in the agriculture sector as being limited, but the response was not unambiguous. A few respondents simply replied that there would be nothing to do and no help to get, and that they would starve, die or simply persist. One would contact governmental officials to get assistance, while a few said they would cope if they got a job. Several claimed that they would have to buy food by borrowing money from others or sell cassava, and one mentioned that the household had no food storage because the land was too small. One respondent had lost one of his main sources of income, as he earlier had been working for the people living in the area which is now fenced off, and who has been resettled, leaving his coping ability severely affected. Despite this, several respondents assessed their situation as being difficult, but that they had the means to cope: Two had a food-or money storage. Some respondents had money to buy food through the money they earn from fishing, selling coffee or by money that someone in the family earned through wage-employment. Their level of resilience is therefore higher than among the residents in the resettlement village, as they have more sources for income diversification.

The respondents were also asked about the challenges in the fishing-sector, of which six responded. Several were worried about the decreased water level, caused by the low water level in Lake Victoria and the Nalubaale and Kiira dams. The low water level decreases the fish catch. The respondents also experienced the water fluctuation, rain and dirty water as challenging, since this complicates their work on the river and decreases their fish catch. As mentioned, the respondents were worried about contamination of the water by fumes and chemicals from the construction. This could limit the growth and quantity of fish and lead to unhygienic surroundings and disease, and banning or reducing the amount of fishermen in the area. One was worried about the flow-regime of the river: A faster flowing river made it difficult to control the boats used for fishing and reduce their fish-catch, but the respondent was positive regarding finding an alternative site for fishing. Another respondent was worried about the water level. Higher water level made it more difficult to fish. Their ability to cope with negative effects on the fishing sector was diverse: Only one respondent claimed that it would not affect the household, while several said they would have to rely on the agricultural outputs, by working harder on their plots and produce more. One respondent said that as they would have to rely on farming and be unable to sell fish and they would not have any money for buying necessities. One mentioned that they would have to rely on another job, but that as getting a job is dependent on the seasons, there is no certainty in getting a job.

The respondents were also asked whether there were any alternative livelihood supporting activities they could turn to either now or in the future if their livelihood was negatively affected by the dam. Several pointed to their lack of schooling, either completely or that they had not finished beyond primary school: “*No school, no jobs*”. They found it unlikely that they would succeed in the job market. Mainly the same people also pointed to that their level of knowledge did not exceed the agricultural sector: That agricultural work was all they knew and they would not be able to work in another line of work. One pointed to the fact that there were no jobs to get, and another pointed to how agricultural activities are the only ones that could help their household when assistance is needed. But several people did see opportunities for getting alternative livelihood supporting activities: A few pointed to the possibility of getting work related to construction of the dam, while others had ideas for

businesses they could set up by themselves: Trading clothes, trading food crops and general trading, but that they would need some kind of initial assistance in order to start it up. One respondent pointed specifically at the Presidential Projects, who provides micro loans for setting up small-scale business. Two respondents referred to their schooling, Primary Seven and Secondary Second and meant that they could get a job if they did some inquiries. One said that there currently were no job opportunities, and that an offer had to be made, whilst another could not get a job, because that meant she would have to leave her children alone during daytime.

For the entire downstream settlement, their assets will be vital in determining their *future situation* regarding livelihood strategies. The respondents' assessment of their ability to cope if the agricultural sector is adversely affected is somewhat varied. Some respondents assess their coping ability as being relatively good, with food or money storage, or having the ability to borrow necessities from friends. Other replied that they would not have the ability to cope, that they did not have the ability to revise their livelihood strategies. But the impact on agriculture by the dam is likely to be minor, and it is not likely that the locals whose livelihood strategies are mainly based on agriculture will experience a major impact on their livelihood strategies.

Livelihoods partly based on fishing are, on the other hand, more exposed to negative effects on their livelihood strategies. The main future challenges recognised by the respondents are changes in the water level, water fluctuation and polluted and contaminated water, as it impacts the fish catch adversely. These factors can be affected both during construction and during operation. The proposed plan for the flow-regime of the dam is that it will abide the regulations of the Agreed Curve, which aims to mimic the natural flows of the river. In addition, the storage capacity of the Bujagali Hydro-Power Dam is quite limited (R.J BIL 2006:361), so it will mainly follow the flow-regime of Naluubale/Kiira dams. But the operation of these dams has been more and more adapted to the demand for power, instead of the Agreed Curve (R.J BIL 2006:360). NAPE has also pointed to how the Agreed Curve is no longer respected (NAPE 2007:3), but it is difficult to assess how it will affect the outflow of the Bujagali Hydro-Power Dam, because of its limited storage capacity. The SEA from Burnside does expect significant effects from the flow regime in the immediate downstream (R.J. BIL 2006:358), without defining exactly what that implies.

It is likely that the dam during operation, and especially during construction, will adversely impact the downstream fisheries, and therefore also the livelihood strategies and livelihood situation of the locals. Adverse impacts on farming have the potential of constituting a major risk of impoverishment, but do not seem likely to occur. As none of the respondent rely solely on fishing for sustaining their livelihoods, their assessment of their ability to cope if the fisheries are affected is both diverse and not as negative as the assessment of coping mechanism if the agriculture is affected. It can, however, leave the households more vulnerable than earlier, since one source of income will be limited or gone. The prospects for finding alternative livelihood supporting activities through employment, if their current ones are adversely affected, seem limited. It seems as though the livelihood strategies are based both the needs of the locals and the assets at their disposal, but the main factor is the limits that are inherent in their own livelihood situation and in the surroundings. In short, if the assets are adversely affected, so can the livelihood strategies. If the livelihoods are negatively affected, it will probably contribute to impoverishment through an increased vulnerability situation, as their alternative livelihood supporting activities are limited.



**7.2.5 Concluding Remarks: Landlessness, Joblessness, Food security and Marginalisation**

The livelihood outcome is the result of the combination and dynamics between assets, strategies and possibilities inherent in a household’s surroundings and can be measured according to different factors. Based on the fourth proposition, this part will look at the risks of impoverishment among the downstream settlements according to landlessness, joblessness, food security and marginalisation. The status of these indicators suggests that the downstream population faces a moderate risk of impoverishment.

According to Adams, a dam especially has the ability to adversely affect the assets of the project-affected people, and as the downstream population to a large extent is dependent on their assets, the risk of adverse impacts becomes precarious. The downstream settlements run little risk of losing further plots of land, except from changes in the required land take for construction and operation. There are also small chances for the dam to affect the quality of the land. However, the residents living close to the construction site can be affected, if the construction leads to erosion, contamination, etc. of the land. This also means that there is little risk of losing jobs in the agricultural sector. However, the risk of joblessness is higher in the fishing sector, and a few respondents had already experienced major challenges regarding their ability to fish. The construction and operation of the dam has the ability to both impact the fish stock and the access to fish sites, and thereby affecting the downstream fishermen ability to continue working in the fishing sector. The situation is also risky because there seem to be few alternative jobs in the area which could compensate for losing the jobs in the fishing sector. However, as several households have a relatively high degree of income diversification through having jobs that are not in the agriculture or fishing sector, it is likely that many will have the ability to counteract possible adverse impacts on natural resources. In addition, employment at the construction site and mitigation measures has the ability to provide the locals with alternative employment opportunities, although this is only temporarily.

The food security in the downstream settlements risk a moderate impact, based on the predictions of impacts on the fisheries. This is how the respondents assess their current food security:

<b>Food Security</b>	<b>Response</b>
<b>Good</b>	8
<b>Bad</b>	12
<b>No. of Respondents</b>	20

*Table 7.2.4: Food security*

Two respondents replied that their food security situation varied according to the season, but these were assessed as to have a bad food security situation. They both expressed worry for the dry season, when they encountered problems and uncertainty which reflects insecurity.

All in all, twelve respondents claimed their food security was bad, and were mainly dependent on farming for their sustaining their food situation. Agriculture is not likely to be affected, but

as a few of these also depend on fishing, their food security can be adversely affected. The economic situation of most of these households has a low level of diversification, and there are few alternative livelihood supporting activities. This would leave them vulnerable to negative impacts on their food situation. Eight respondents classified their food security as good, of which several rely on fishing. The fisheries can be affected, but the respondents have the possibility to rely on food-and money storage and wage employment, constituting a relatively high level of resilience towards adverse impacts on their assets and livelihood strategies. One of the respondents said he would only worry if he got sick and could not work. Those in wage employment are not likely to be adversely affected, since external employment is no likely to be affected at all. Those assessing their situation to be bad, pointed to factors like their dependency on weather and crop disease to determine whether they would get enough yields, that there were days without eating and that they had no food storage for periods with low yields. One mentioned how the only solution was to “*send the boys out to look for food*”. Some respondents experienced days without food and a great deal of uncertainty regarding planning their future meals. Four respondents, all of who lost land to the construction site, responded that there had been a change in their food security situation after loosing their original plots of land and access to fish and landing sites. They had all experienced a worsening of their food security situation, and two of them stated the reason being their inability to sell as much products as they did earlier. As many respondents rely on seasons to secure their availability of food, the impact is likely to be minimal, since the dam is not expected to affect the agriculture to a large extent. But as some of the respondents claimed that their food security had worsened since they had lost access to fish sites, it is likely that others in the community also risk a worsened food situation if the fisheries are affected.

The dam proposes a moderate risk of *marginalisation* in the downstream settlements. This risk is mainly caused by the potential negative effects on the fisheries. How much it actually will impact the livelihoods, and especially their socioeconomic situation depends on their vulnerability situation, mainly through assets. The dam can cause marginalisation in two ways: temporarily and permanently. The temporary impact will mainly affect the fisheries and the water quality, while the permanent effects can cause long term impacts on the fisheries. Both have the ability to especially impact the economic income from fishing. However, even if the effects are only temporarily in terms of its impact, the effects can be long term for the local livelihoods. Their coping mechanisms are somewhat varied, but the households with few or none coping mechanisms will not be able to withstand the impacts, leading to further marginalisation. They will probably not be able to independently restore their livelihoods. The households with relatively good coping mechanisms will probably also be affected, but to a lesser extent. It will depend on the degree of their coping mechanisms, and the dynamics of their livelihood situation and the impacts. The dam also has the ability to lead to marginalisation beyond the tangible factors presented above. Lack of employment, lowered food security and loss of the river as the major source of water can give the inhabitants a sense of powerlessness, or marginalisation in psychological terms. As the proposed situation is mainly outside their own control, their sense of well-being through the ability to cope with their own livelihood situation can be reduced. They also risk psychological marginalisation by losing their ability to practice what they know, for example fishing, and especially the feeling of redundancy. Adams points to how a dam can change the migratory patterns of project-affected people. The project-affected people in this area are mainly residents but several respondents in the resettled village mentioned how members of their household had left since the resettlement. It is difficult to know whether this was caused by the impacts of the resettlement or other factors. However, if people in the downstream area experience

impoverishment, and especially the inability to obtain employment and sustaining their livelihoods, they might be forced to relocate.

In order to assess the respondents level of *poverty* based on their own definitions, the respondents were asked to provide a general definition of poverty. Several respondents defined poverty according to the components used in this paper from Cernea’s IRR model. As in the interviews in the resettlement area, most respondent in the downstream area also replied using their own situation as a point of reference, not necessarily providing a general definition. Their poverty situation is mainly decided by their assets, affecting employment and economic income. As mentioned, wage employment and their agricultural plots are not likely to be affected. But since the dam can potentially affect the fisheries, their economic income from fishing can decrease. Ten respondents answered by only pointing at a lack of money or income, whilst two pointed to the lack or shortage of land and money. Two defined poverty as having no land, since that constitutes the main source of income, while another pointed to unemployment. Some respondents defined poverty not only by pointing to the lack of money, but by focusing on *how* the lack of money constitutes poverty: Lack of money is a hindrance against “*helping yourself*” and accessing basic needs, assisting the household and to have the ability to do what you want. Another respondent pointed to how it fails to provide incentive to start a business. Finally, one respondent defined poverty by not having anything to do and no money.

<b>Poverty Status</b>	<b>Respondents</b>
<b>Poor</b>	18
<b>Very Poor</b>	2
<b>No. of Respondents</b>	20

Table 7.2.5: Poverty Status

Most respondents classifying themselves as *poor* referred to an “*average*” *poverty*, pointing out that they are people who have got *something*, like land or “*something to do*”. However, they had a low income and no possibility to build things up, or money for school fees and proper food for their children. Two of the respondents, who had lost parts of the land to the fenced off area, claimed that their poverty status had worsened since the expropriation. One claimed that his poverty had increased, since the “*ability to look after himself*” had diminished. The other respondent had lost his family home and plantation, and classified himself as “*well-off*” before the expropriation. The two respondents classifying their households as very poor refer mainly to their assets and their ability to work. One claims that the land is too small while the other was widowed with a small piece of land. In addition, the latter was obliged to take care of her landlord’s house, without payment.

## **Chapter 8 Sustainable Livelihoods Approach – Analysing Impoverishment**

This section will analyse the findings from the two settlements according to the most relevant components of the Sustainable Livelihoods Framework. The aim is to investigate how the components contribute to impoverishment among the project-affected people. In addition it seeks analyse *how* the components and the dynamics between these have generated the livelihood outcome and to provide a broader understanding of their livelihood situation and their current and potential future livelihood outcome.

### **8.1 Naminya Resettlement Village and the Road to Impoverishment**

The findings from the Naminya resettlement village suggest that the relocation has led to impoverishment of the resettled community through several mechanisms. The livelihood outcome among the respondents is not uniform, as the respondents assess their livelihood situation and poverty status differently. The impoverishment has occurred through different mechanisms on the different households. However, it seems as the most important factors of the impoverishment process is the loss or decline of natural assets and partly isolation caused by the site for the resettlement and the lack of proper infrastructure.

The overarching element that has contributed to shape the livelihoods of the resettled people is the *transforming structures and processes*, through mechanisms mainly outside the control of the resettled. First, by the national policies which initiated an increased energy production through hydro-power, and second, the commercial initiative by the former and current companies responsible for the construction. Both the aims of the project and the means to reach the final stage have been decided by these, which has indirectly influenced the livelihoods of the resettled people, especially in terms of assets. But what has probably further affected the local livelihoods is the lack of measures to counteract negative effects from the resettlement on behalf of these institutions, and reducing the vulnerability of the local livelihoods. This will be looked into below.

Assets seem to be at the core of the process of impoverishment among the respondents. The assets have not only been adversely affected *per se*, but the impact on assets contributes to enforce the effects on the other components in the framework. In addition, the impact on the different types of assets can not only be treated separately, but also according to how one type of assets can affect other assets. The impact which has been most directly affected is the natural capital, through hindering the access to fish sites and land issues, especially in terms of quality and size. As a result of this, all respondents in the fishing sector experienced decreased income and fish catch for consumption, while the majority experienced decreased income and less yields for consumption from farming. Adverse impacts on the ability to farm were listed as one of the main factors of poverty among the respondents. In addition, the access to markets for selling their products has worsened, both because of the natural capital and the status of the physical capital, which has given the respondents less products to sell and decreased their mobility. The impact has also affected their human capital, by reducing their food security and thereby threatening their health. In general, they produce less food for consumption and generate less income which could secure their food security. Low income and the inability to obtain essential needs, like water and food, were also recognized as some

of the factors constituting poverty among the respondents. The impact on the status of assets is especially clear if one compares to the status in the previous settlement. They did experience challenges in terms of agriculture and fishing, but their broad spectrum of the output and utilisation of these enabled them to better cope with adverse impacts, despite the fact that the vulnerability context and the transforming structures and processes were similar to their current situation.

The correlation between factors in the *vulnerability context* and *assets* seems to be strong. The assets and the vulnerability context are closely connected, and it is difficult to say which component impacts the other one more. But data from the resettlement site suggest that the vulnerability context *worsens* the assets situation, which has followed the relocation, through several mechanisms. This component points to seasonality as a mechanism beyond the control of people and how it can determine the status of assets and livelihoods. Seasonality seems to be important in understanding their livelihoods mainly in two ways: Through agricultural production and employment. The main line of occupation is farming and the agricultural outputs are dependent on the seasons. Seasonality can lower the production in farming in an already marginalised production, by decreasing the yields in dry seasons. The agricultural yields and surplus are already limited based on the size and quality of the soil and the low production rate in the dry seasons, leaving the livelihoods more vulnerable towards negative impacts as the employment opportunities also follow the same pattern. Many respondents have also lost the opportunity to fish as a substitute for the low agricultural production during the dry seasons. This complicates their ability to diversify their economies. External employment opportunities are limited, and one of the few job opportunities is working for other farmers, whose demand for help is most critical in the rain seasons when resettlers themselves experience increased yield. The lowered agricultural output is therefore accompanied with fewer opportunities for employment, which the respondents recognise as a major risk for poverty. The most severe indirect effect of this is a worsened food security situation. The decreased availability of food is critical both because of lower yields during dry season and the lack of financial assets for purchasing alternative food caused by few employment opportunities.

The status of financial assets, together with the status of human and physical capital, inhibits the opportunity to convert financial capital into other types of capital for most respondents. Their skills and knowledge is mainly based on the utilization of natural resources, but their financial situation prevents them from expanding the fishing-and agricultural sectors or to initiate new livelihood activities based on the same assets. In addition, many respondents mentioned lack of physical capital, such as electricity and transport as a major obstacle in expanding their livelihood activities. Public transport is considered being too expensive and difficult to access. This affects the status of their capital in several ways: They are not able to use financial assets to generate *more* financial assets, to increase their level of knowledge and skills and develop a stronger social capital. In many ways, it leaves them isolated from developing potential opportunities.

As mentioned, the status of the assets above is also partly a result of *transforming structures and processes*. Their level of education is a result of policies on the governmental level, which does not facilitate education for all. Not finishing primary or secondary school is relatively normal in Uganda, especially in the rural areas. None of the respondents had schooling beyond secondary level, and most have not finished primary level. The cost of schooling is the most common reason for not completing. Second, neither governmental institutions nor private initiatives have facilitated further training which could increase their

level of knowledge and skills, and thereby their opportunities of employment. Similarly, physical capital in terms of public transport and electricity has not been provided by the same institutions to improve their ability to be available for employment and odd jobs and to have the opportunity to implement ideas which can diversify their economy. The access to capital from external sources is also limited, as regular policies on loans require collateral, which the resettled people do not have. Governmental institutions and the commercial parties in the project also offer limited opportunities for employment, which could have counteracted the negative effects of the construction. The plan for the construction does involve employing locals for some of the tasks (R.J. BIL 2006:335), but this is only a short-term measure. It will provide economic income for those that are employed and will probably have positive effect both for the respective household and beyond, but when the construction is finished, these workers will be laid off. However, this opportunity can have some good effects: Increasing their social network, providing them with start capital and strengthening their level of skills and knowledge. These factors can both make them more attractive in the job market as well as enable them to create their own alternative livelihoods strategies. The economic income they will receive from such work can not only contribute directly to their financial assets, but can be converted into other types of assets.

What has directly affected the livelihoods the most through the transforming structure and processes is the type of compensation that was given to the resettled people. It did not have the ability to restore or improve the livelihoods of the majority of the people. However, the correlation between the transforming structures and process onto the asset status is not one-sided: The status of assets also affects the level of impact society is able to exercise towards the overarching structures and processes, especially when it comes to policies, organisations, regulations and institutions, as the social assets seems limited. The data from the resettlement village suggest that the inhabitants have limited social capital which, which especially through social networks and the general civil society, could improve their ability to affect the transforming structures and processes. This assumption is based on the limited assistance the respondents expected to receive from friends and family if there were periods where they could not rely on sustaining themselves and that they did not seem to have any kind of network which could facilitate employment opportunities. The lack of assistance from other people was also listed as a sign of poverty. If the civil society representing the interests of the resettlement village was stronger, the impacts could have been reduced or facilities for improvement could have been initiated.

Assets are crucial for what kind of *livelihood strategies* are available for a household, and the vulnerability context and the transforming structures and processes can through the effect on assets impact the way in which the livelihoods strategies develop. The more assets that are available for a household, the more strategies they have to choose from and it can enable households to rely on several sources both for income and for consumption. Through access to several assets, the household can choose a livelihood strategy which aims at diversifying the economy and leave them less vulnerable towards adverse impacts. Their skills and knowledge can determine in which way they are able to utilise the assets they have, and enable people to expand and convert assets into other types of assets, especially if they also have financial assets. Social capital can expand their opportunities through networks and exercise influence towards the transforming structures and processes which indirectly through the impact on assets can impact livelihood strategies. But the situation in the resettlement village has turned out otherwise: Their opportunities have lowered and they seem to no longer have a choice when it comes to deciding the livelihood strategy which would produce the most desirable outcome with the current status of their assets. Most of the respondents have

no other option than to work solely as farmers and to sell whatever surplus they might get. This leaves them in a vulnerable situation, where they face difficulties withstanding further adverse impacts on their livelihood situation.

The *livelihood outcome* is largely decided by the components in the Sustainable Livelihoods Framework. The livelihood outcome in the resettlement village has worsened and the majority of the respondents have experienced impoverishment regarding land issues, joblessness, food security and marginalisation. The resettled do not seem to have reached further than stage two in Dorcey et al.'s four-stage model for resettlement. They have adapted to the new site, but there has been little consolidation of the community and no economic development. Their livelihoods situation, livelihood strategies and outcome seem to no longer be a result of the choices the people make, but rather the constraints inherent in their livelihood situation and the external environment. The livelihood opportunities are few and the activities are largely centered on farming as the only possible way of sustaining their livelihoods. There are few prospects for extending their range of assets, to decrease their vulnerability towards changes and to reverse the impoverishment independently.

## **8.2 Downstream Settlements and the Elements of Risk**

The findings from the downstream settlements suggest a moderate risk of impoverishment. A minority of the downstream population has been affected by the construction at this point and the impact assessment regarding the dam suggests that the two following elements are likely to adversely affect the population as result of the dam: The impact on the fish population and the quality of water. The first will only directly affect those in the fishing-sector, while the latter have the ability to affect a majority of the population. This analysis aims at investigating the way in which way the different components interact and how this as well as the external impact suggests a risk of impoverishment among the downstream population.

Both elements which are likely to be affected by the dam, water and fisheries, suggests that *assets* lie at the core of the elements constituting risks of impoverishment caused by the construction also in the downstream settlements. But these assets do not act independently to create these risks, but rather in a dynamic relationship with the other types of assets and the other components in the Sustainable Livelihoods Framework, which especially reinforces the negative impacts on assets. Adverse impacts on the fish sector will first of all affect the financial and human capital. Lack of income was especially pointed out as contributing to poverty by some of the respondents, and their limited human capital was considered as a constraint towards expanding their livelihoods activities. For those relying on sale of fish for economic income, a decreased fish catch means decreased income. Less fish for consumption and sale and the impact on human capital mainly affects food security and thereby their health, both directly and indirectly: Less food for consumption and less economic income, further affects the ability to buy food. Human capital can also be affected through making knowledge and skills they possess about fishing redundant if the fish catch decreases or the people are restricted from fishing. Decreased economic income will also minimise their abilities for saving and for investing in alternative livelihood activities, which again could generate further income or other assets.

Impacts on assets are also interrelated with the *vulnerability context*, which especially has the ability to worsen the difficulties people can encounter if their ability to fish diminishes. Seasonality leads to less agricultural output in the dry seasons, and if households loose their

access to their regular alternative source of food and income, it can affect assets in the same manner as described in the section above. The households dependent on fishing will not be able to rely on fish as a source of food and economic income, which again will affect their ability to purchase food. Since employment often follows patterns according to the seasons, especially regarding jobs within farming, the possibility to obtain a job to compensate for the loss of fishing and the ability to sustain their livelihoods through agriculture in the dry seasons can be difficult. If fishing is affected, those who are left dependent solely on farming can also experience difficulties in providing their households with other basic necessities if their crops are subjected to disease or other adverse impacts that decreases their yields. They will have limited alternatives for sustaining their livelihoods if they are not sufficiently diversified and resilient towards adverse impacts.

The status of the human capital also limits the local's ability to utilise alternative ways of sustaining their livelihoods, as their level of schooling is low and their skills and knowledge are largely centered on the way they are currently conducting fishing and farming. They are therefore not likely to be versatile enough to utilise other ways of fishing and farming which could counteract the effects of such shocks. The level of schooling, skills and knowledge has largely been decided by *transforming structures and processes*, which is in charge of public schooling. The local's inability to complete public schooling and the lack of incentives and opportunities to acquire further skills and knowledge has been absent. This component of the framework is also the one which has laid the framework for how the construction will be and largely how it has and will impact the locals. Especially the possible of loss of access to fish sites, both now and in the future, is a result of decisions made by the private enterprise building the dam together with the approval of governmental institutions. Transforming processes also inhibits the locals from directly acquiring capital from banks and other institutions, as the norm is to require collateral when offering a loan. The locals have little or no possibility to offer such collateral. Their access to capital from external sources to develop businesses, influence the status of the other assets and to utilise the possibilities for alternative livelihood activities is therefore minimal. Such financial capital could also counteract extreme vulnerability, both because of loss of assets and the additional stress the assets can be subjected to through seasonality and shocks to crops; especially in terms of securing their food situation and economic income. The employment opportunities, or lack of such, are also largely decided by transforming structures and processes, as it can create employment opportunities directly or facilitate entrepreneurship and thereby increased need for labour. Employment was considered among the respondents as a vital step in avoiding poverty. As mentioned, the OED points to how adverse downstream impacts are not caused by the dam itself, but rather that the construction is not accompanied with proper investments. This suggests that if the project-affected area attracts financial investments, it can contribute to counteract negative impacts. As in the resettlement village, one of the few opportunities for wage employment can be provided by the construction of the dam. This is only short-term, but might give the locals capital for further investment and skills and knowledge, making them more attractive in the job market. Wage employment increases not only financial capital, but indirectly also other types of capital. It also affects the livelihood strategies of the locals and increases the possibility to diversify their economy.

The local government and the private enterprise have not yet provided the locals with physical capital in terms of boreholes that could counteract the effects of a worsened water quality and the worry the locals inhabits at the current time. A lowered water quality can seriously impact the health of the inhabitants, and impact their ability to work. Similarly, improved access to proper fish sites has not been secured. The local's level of social capital also seems to hinder



them from influencing the policies which could prevent them from loose assets following the construction. This assumption is based on many respondents and the Local Council's frustration over the expected impacts on their livelihoods and their inability to exercise pressure on the construction company and to rely on social networks in times of less production. Such influence could have provided the locals with assistance and assets that are vital for them and that could counteract the adverse impacts from the dam.

The *livelihood strategies* available for the locals are strongly interrelated with the level and types of assets the households possess and the level of diversification. Compared with the resettled area, the downstream population is more economic diversified. Access to natural capital, in this context especially fish, provides opportunities for both increased economic diversification and food security. Natural capital, like yields from farming and fishing can provide capital that can be converted into other assets which again can further diversification. The lack of financial resources, either through direct financial support or indirectly through converting other assets, can seriously inhibit extending the range of livelihood options, activities and strategies. Many respondents referred to how the lack of money constitutes poverty, especially by pointing at the inability to provide the household with basic needs, start a business and a general freedom to do what one wants. These issues represent parts of the core of livelihoods strategies: Economic diversification can decrease vulnerability and allow people to secure their ability to cover basic needs. It is also a prerequisite for being able to start up new businesses and create more livelihood options. This is especially relevant if the natural capital diminishes and there are few alternative employment opportunities. Financial resources also has the ability to counteract negative effects by allowing the locals to either expand their current livelihood activities, like increasing the amount cash crops, or starting up new business. Further livelihood diversification would also normally require human capital, especially in terms of skills and knowledge. Adverse impacts on the fisheries could through increased human capital either be counteracted by utilising what opportunities lie in the fisheries further or by finding new sources of employment, either through external sources for self-employment.

The *livelihood outcome* is a result of the interaction between these components. Whether or not the outcome is desirable depends on the goals of the households. The data from the downstream settlement and the assessment report suggest a moderate risk of impoverishment. The risk is largely dependent on the way in which the dam will affect the fisheries and the water quality. The most adverse outcomes from the dam are likely to be a worsened food security and health situation, less income and employment. These are all strongly interrelated, and the impact on one of these assets is likely to affect the others. Adverse impacts on the water quality without alternative sources of water being provided for, constitute a lack of one of the most important basic necessities, and therefore represent another risk of impoverishment. Securing their own food situation, their economic income and employment and the difficulties that present has largely been adapted to the livelihood strategies and situation the population is in. However, the possible changes from the dam will give them a new range of challenges they might not have the means to meet in a sustainable way. The changes can be rapid, leaving them without the opportunity to slowly adapt to new circumstances and finding sustainable solutions and desirable outcomes.

## **Chapter 9 Conclusion**

### **9.1. Main Findings**

The conclusion of this thesis is based on the research questions introduced in the first chapter and present the main trends from the analysis. The last part establishes the scope of the research as well as a few recommendations that could help counteract impoverishment among the project-affected people.

The main objectives of this thesis have been to investigate whether the relocation of project-affected people has led to impoverishment and whether the downstream population risks impoverishment through of the environmental effects of the Bujagali Hydro-Power Dam. Previous empirical research has provided this paper with the main trends and tendencies in similar projects, which has contributed to establish the effects of the Bujagali Hydro-Power Dam. The IRR model and the SL approach have complemented the previous empirical research with tools for data collection and analysis. The data collection in the resettled village has concentrated on gathering data on the livelihood situation of the locals and the current impacts of the dam in order to identify impoverishment as a result of the environmental effects of them dam and the relocation. The downstream populations have been studied in order to investigate the impacts of the dam so far and how the livelihoods can be further affected after the construction and operation of the dam has commenced.

The analysis of the data shows that so far, the Bujagali dam has not created any direct environmental effects which have impacted the natural resource base for the local residents. However, the site for construction has required a land take causing relocation of the people previously residing there and it has cut off access to parts of the fishing sites and landing sites. Further on, the dam is expected to affect the natural resources base directly after the construction and operation has started. The fish population can be adversely affected through a change in the river's ecosystem and the biological production. The potential lowered water quality can also affect the ability to access clean water. However, it is difficult to establish the actual effects that will occur following the construction and operation, as the effects that have been presented in the assessment report are only based on prediction.

The forced relocation has led to impoverishment among the residents in the Naminya resettlement village, and it is especially caused by the impact on their assets. The agricultural output and the ability to fish have been severely affected, either through the characteristics of their new plots of land or lack of access to fish sites. The status of their agricultural plots has deteriorated, there is less opportunities for employment, the food security has diminished and the respondents have experienced increased marginalisation. The latter seems to be one of the key aspects in the impoverishment and one can also claim that the resettled population was to certain extent already marginalised in terms of education and the range of opportunities in their former settlement. However, these factors did not prevent them from securing their livelihoods and avoiding further impoverishment in the former settlement area as their level of resilience was higher. The marginalisation is especially severe in terms of the lack of possibilities and opportunities, and that the livelihood strategies undertaken by the inhabitants is not a matter of choice, but rather a result of the limits in their surroundings.

No measures have been able to reverse the livelihood outcome. Compensation for loss of assets and relocation intends to avoid deterioration of affected livelihoods. However, the compensation for the displaced population in this project has not been able to reverse the effects or rehabilitate the resettled population and there has been no other external assistance which has hindered impoverishment. But it is difficult to know why the compensation did not work as intended, whether it is the model itself or that it was not suitable for the location of the resettlement site. Especially when considering that a few respondents were actually able to use the cash compensation for a long-term investment. Among the respondents, their inability to use the cash compensation for long-term investments was explained by the lack of food in the area when they moved there. However, it might also be dependent on their expectations towards the new area of settlement. They might not have expected such adverse impacts on their assets, the lack of alternative livelihood activities in the new settlement area or the challenges the isolated site would propose. They might also have relied on the assistance of the constructors regarding electricity or access to alternative livelihood activities. The need for long-term investments might therefore not have been considered necessary, as well as being a result of individual preferences and priorities. Previous empirical research suggests that compensated people often does not have the skills and knowledge to properly utilise cash compensation. But it is difficult to say whether the increased consumption among relocated people in this project is caused by lack of skills and knowledge, the necessity of obtaining basic needs or their expectations. The sudden change in livelihood situation could any way have benefited from complementary schemes which assist in utilising the assets at hand and counteract adverse impacts. Schemes which promoted employment would have been especially fruitful, as it could affect the local's level of diversification and their livelihood activities and create favourable conditions for increased resilience to adverse impacts. .

The data from the downstream population suggests a moderate risk of impoverishment, based on the predictions on the proposed impacts and the effects these may have on the local livelihoods. As in the resettlement village, assets lie at the core of the risk of impoverishment. Landlessness seems unlikely, but the dam can impact the agricultural plots to a certain extent and the employment opportunities can decrease. These two factors can further impact the food security and the level of marginalisation. These assumptions are mainly based on the following main findings. As the agricultural sector as well as some respondents' employment in sectors which are not relying on natural resources gives the respondents a more expanded set of possible livelihood strategies than the resettled population and a more diversified economy, their resilience towards external adverse impact seem better. On the other hand, the households in the fishing sector can experience difficulties in compensating for the loss of fish for consumption or sale, especially through the lack of alternative employment to counteract the losses, and its impact on impoverishment is dependent on their level of diversification and resilience. In addition, lowered water quality can affect the availability of pure water for the population, which can especially affect the health of the residents. But regardless of the potential adverse impacts on the natural assets, it is likely to be considered ineligible for individual compensation, as neither fish nor water is subjected to ownership. However, mitigation measures are suggested to minimize the adverse impacts.

The paper also looked into how the components of the SL framework creates and contributes to the level of impoverishment among the project-affected people. The components acts quite similarly in both settlements and are mainly contributing to increasing the level of impoverishment. The assets are also at the core of this framework, affecting the other

components as well as *being* adversely affected. The main findings from this analysis show how a livelihood outcome is the result of a myriad of factors and how the dynamic between these can create different livelihood outcome despite similar livelihood situations. The most important experience deduced from this is that livelihoods are not static phenomenon and is best investigated in relation to other influencing factors. It has provided this research with concrete data on how the livelihood outcome has come to be and what factors have been the main influences on the outcome.

## **9.2 The Scope of the Research**

The main trends presented in this paper offers important information about the livelihoods of the project-affected people, and several measurements has been taken to ensure the validity and reliability of the findings. The most important are the complementary case studies and general observation which assisted me in cross-checking replies, enabling me to compared different types of data. In addition, the sample population is large enough to both include individual perceptions as well as being able to capture the general trends. The interviews were also assisted by cues and hints in order to ensure that the respondents understood what the questions implied. By comparing the different sets of data, together with observation and case studies, I was able to detect whether there was any inconsistency in the replies which would need further investigation. It also enabled me to verify and falsify elements from the interviews and to correct and elaborate on some of the answers given in the interviews and thereby strengthen the validity of the data. In addition, the presentation of the data is exemplified by some of the replies with direct (although translated) quotes in order to increase the reliability of the data and the conclusion. The sample criteria provided me with a sample population with a broad range of characteristics. The data collection was therefore able to capture several aspects of the project-affected livelihoods and show how the livelihood situation is perceived differently as well as providing the research with a well grounded conclusion.

## **9.3. Recommendations**

In order to counteract the adverse impacts among the project-affected people, further research on their livelihood situation could shed light on other aspects which are important in establishing the measures which can be taken to reverse or avoid impoverishment. Mapping the possibilities the surroundings presents and project-affected people's ability to create or follow up alternative livelihood activities can result in more concrete suggestions for improvement.

But this research does point towards some measures which could facilitate improved livelihoods. Minor measurements in the resettled area that could be favourable for the health and education among the inhabitants would be more boreholes, a better school in terms of building and equipment and a better equipped and staffed school. This would have been beneficial for the locals, not only because of the long term effects it could have on their health and level of education, but also because it could minimise the psychological marginalisation they experience through being deprived of what they consider to be basic necessities. Further reversing the livelihood outcome would require an expansion of the livelihood strategies at their disposal. As there is limited action to be taken regarding the plots of land they have received, because of land ownership and limited space, creating employment opportunities in

other sectors would be the best option. Several respondents pointed to how electricity would expand their options, but setting up a new business would probably also require micro-finance. In addition, improved infrastructure would greatly expand their ability to find jobs and to sell their products at the market.

The downstream settlements first of all risk impoverishment through the lack of access to clean water. As the boreholes are limited, this can impact a major part of the inhabitants, especially in terms of health issues. More boreholes should be built as well as securing their access to a proper facility for washing clothes. Further on, the access to alternative fish sites should be secured for those currently in the fishing sector. If the fish stock is adversely affected to the extent that it is difficult to sustain livelihoods, alternative livelihood activities should be facilitated. If possible, the impoundment can be an alternative fish site for the locals, which would also contribute to utilise the skills and knowledge the locals inhabit. If that is not possible, alternative activities should either be possible to obtain among the locals based on their current level of schooling, skills and knowledge or should be accompanied with training which could expand their abilities.

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