

Master Thesis

Comparison of conceptualized and observed processes and effects of a Research for Development Project

The case of a water management technology in Uganda

Submitted by

Lisa Haller, Bakk. techn.

Supervisor: Priv.-Doz. Dr. Maria Wurzinger

University of Natural Resources and Life Sciences Vienna, Department of Sustainable
Agricultural Systems, Division of Livestock Sciences

Co-Supervisor: Mag. Dr. Lorenz Probst

University of Natural Resources and Life Sciences Vienna, Centre for Development Research

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Abstract

This master thesis analyses a part of the WATERCAP project in Nakasongola district Uganda. The overall goal of the project was to strengthen universities' capacities to address climate change induced water vulnerability and uncertainty. In Uganda two '*Innovation Platforms*' were initiated to facilitate knowledge exchange among stakeholders and to trigger mutual learning processes. This should lead to more efficient and sustainable use of local water resources. As part of the project's activities in Nakasongola a community-managed valley tank that had been in place since the late 1960s was de-silted. Furthermore, a new trough for watering cattle was constructed and a petrol powered pump purchased.

The aim of this study is to understand the processes and effects of the WATERCAP project in Nakasongola. Discrepancies between these conceptualized processes from the project proposal and the observed and reported situation are assessed. Therefore, this research contributes to a better understanding of social dynamics influencing the project's activities. For this purpose, the focus is on participatory approaches, social structures and the sustainable use of the water resource in Nakasongola.

The data analysed were derived from qualitative interviews with relevant actors. Furthermore, group discussions, the drawing of stakeholder maps and participant observation formed part of the data collection.

Based on the theories of '*Complex Adaptive Systems*' and '*Agricultural Innovation Systems*' the formalisation of an '*Innovation Platform*' was assessed. The empirical findings indicate that an '*Innovation Platform*' was not established as conceptualized in the project proposal. This had impacts on participatory processes. While livestock owners were partly involved in the project's activities, participation of local community members took place at rather low levels ranging from no participation to consultative participation. Furthermore, the overall goal of the project was predefined and community members had a restricted say in decision-making processes. Therefore, only limited empowerment and capacity building of local livestock owners was observed. Moreover, internal power structures were insufficiently taken into consideration, which further jeopardized the project's activities as locally influential stakeholders initially opposed the project's activities.

The purchase of the pump meant a major shift in technology, since traditionally water was bucketed manually to the trough. Yet, regarding the aspect of sustainability, the

empirical assessment suggests that a sustainable use of the water source is possible. However, although the water resource is a community resource, the land tenure is not fully clear. The clarification of the ownership situation is paramount for the sustainability of the water facility as the uncertainty related to the land tenure influences community members' sense of ownership for the resource and the project intervention.

The empirical assessment also revealed that a three-year timespan is not sufficient for a project to 'truly' establish an '*Innovation Platform*' and to engage in participatory processes.

Key words: Agricultural Innovation Systems, Innovation Platform, participation, community-based water management, social structures, ownership, Uganda

Zusammenfassung

Die vorliegende Masterarbeit analysiert eine Aktivität des WATERCAP Projektes in Nakasongola in Uganda. Das Hauptziel des Projektes war es, Universitäten zu stärken um mit Problemen der lokalen Wasserversorgung, die im Zuge des Klimawandels entstanden sind, umzugehen. In Uganda wurden zwei *Innovationsplattformen*, mit dem Ziel den Wissensaustausch zwischen relevanten Akteur_innen zu ermöglichen sowie gemeinschaftliche Lernprozesse zu fördern, gegründet. Dies soll in weiterer Folge zu einer effizienteren und nachhaltigeren Nutzung lokaler Wasserressourcen führen. In Nakasongola wurde im Rahmen des Projektes ein, seit den 1960er Jahren bestehendes, Wasserreservoir von Sedimenten befreit und neu befestigt. Zudem wurde ein neuer Betontrog zur Tränkung von Rindern errichtet und eine Dieselpumpe angeschafft.

Diese Arbeit analysiert die Prozesse und Wirkungen, die mit dem Projekt verbunden sind. Dazu werden die, in Projektdokumenten, geplanten den, von am Projekt Beteiligten, wahrgenommenen Prozessen und Wirkungen gegenüber gestellt. Ziel ist es, ein besseres Verständnis sozialer Einflussfaktoren auf Projekte wie das WATERCAP Projekt zu erlangen. Im Zentrum der Analyse stehen partizipative Prozesse, soziale Strukturen sowie der nachhaltige Umgang der gemeinschaftlich genutzten Wasserressource.

Die analysierten Daten stammen von qualitativen Interviews mit relevanten Akteur_innen. Ergänzt wurden die Interviews mit Gruppendiskussionen, Diagrammen, die die Beziehungen zwischen den Projektbeteiligten darstellen, und Beobachtungen vor Ort.

Basierend auf den Theorien von ‚*Complex Adaptive Systems*‘ und ‚*Agricultural Innovation Systems*‘ geht diese Arbeit der Frage nach, inwieweit die geplante Etablierung einer *Innovationsplattform* im Rahmen des Projektes umgesetzt wurde. Die Ergebnisse zeigen, dass die Formierung einer *Innovationsplattform*, wie ursprünglich angedacht, nicht stattfand. Dies hatte Auswirkungen auf die Partizipation von Projektbeteiligten. Die Nutzer_innen der Wasserressource waren nur beschränkt in die Projektprozesse involviert. Das konkrete Ziel wurde nicht von allen relevanten Akteur_innen gemeinsam gesetzt, sondern war bereits vom Projektteam vorgegeben, wodurch die Nutzer_innen der Wasserressource nur bedingt in Entscheidungsprozesse einbezogen waren. Außerdem wurden interne Machtverhältnisse von Projektverantwortlichen nur begrenzt beachtet, was wiederum

weitere Bemühungen des Projektes behinderte, da einflussreiche Akteur_innen dem Projekt anfangs kritisch gegenüberstanden.

Dennoch haben die Aktivitäten des Projektes das Potential zu einer nachhaltigen Nutzung der Wasserressource beizutragen. Die langfristige Nutzung wird allerdings von mehreren Faktoren beeinflusst. Obwohl es sich um eine gemeinschaftlich genutzte Wasserressource handelt, sind die Besitzverhältnisse des Grundstückes, auf dem sich die Wasserressource befindet, nicht vollständig geklärt. Dies stellt einen beachtlichen Unsicherheitsfaktor für die Nutzer_innen der Wasserressource dar, da dadurch das Nutzungsrecht nicht langfristig sichergestellt ist. Um die nachhaltige Nutzung der Wasserressource zu ermöglichen ist insbesondere die Klärung der Besitzverhältnisse nötig.

Auch die begrenzte Projektdauer von drei Jahren ist, so hat sich gezeigt, nicht ausreichend um eine *Innovationsplattform* zu etablieren und Partizipation aller Beteiligten zu ermöglichen.

Schlagwörter: Agricultural Innovation Systems, Innovationsplattform, Partizipation, gemeinschaftlich genützte Wasserressourcen, soziale Strukturen, Uganda

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List of Abbreviations

| | |
|---------|--|
| ADA | Austrian Development Agency |
| AIS | Agricultural Innovation Systems |
| BOKU | University of Natural Resources and Life Sciences Vienna |
| CAS | Complex Adaptive Systems |
| CBNRM | Community based natural resource management |
| CBO | Community based organisation |
| CNRM | Community natural resource management |
| c/p | chairperson |
| EU | Egerton University, Kenya |
| FAO | Food and Agricultural Organisation of the United Nations |
| GDP | Gross domestic product |
| HU | Hermeneutic unit |
| IWRM | Integrated water resource management |
| IP | Innovation Platform |
| IPCC | Intergovernmental Panel on Climate Change |
| IRC | International Water and Sanitation Centre |
| LC | Local council |
| MAK | Makerere University, Uganda |
| NASA | National Aeronautics and Space Administration |
| NEMA | National Environment Management Authority |
| NGO | Non-Governmental Organisation |
| OECD | Organisation for Economic Co-operation and Development |
| PELUM | Participatory Ecological Land Use Management |
| RMA | Reflexive Monitoring in Action |
| RUFORUM | Regional Universities Forum for Capacity Building in Agriculture |
| UBOS | Uganda Bureau of Statistics |
| WAP | Water Action Plan |

1 Introduction

In central Uganda water scarcity is a major challenge faced by livestock owners leading to high vulnerability. Over the last years climate change has further worsened the situation and jeopardizes livestock owners' livelihoods (Barihaihi 2010: 14).

Therefore, several attempts to reduce the negative impacts on people's livelihoods have been carried out. This thesis is a case study on a Research for Development project dealing with a community-managed water resource for watering livestock in central Uganda. The project applied a multi-stakeholder approach, bringing together various actors such as local community members, government representatives, members of NGOs and scholars, bridging the gulf between scientific research and local realities. The overall goal of the project was to strengthen universities' capacities to address "*climate change induced water vulnerability and uncertainty*" (WATERCAP 2010: 10). In Uganda Innovation Platforms were initiated in two rural communities. This should lead to knowledge exchange between relevant actors and mutual learning processes. Lessons learnt in these platforms should then be fed into universities' curricula, which in further consequence would contribute to more efficient and sustainable water use. (WATERCAP 2010: 10).

This study examines in which way the project implementation deviated from the way it was planned in the project proposal. Based on the approach to divide indicators into processes and effects suggested by the Reflexive Monitoring in Action guide (cf. van Mierlo et al. 2010), this thesis compares conceptualized and observed processes and effects of the project. Regarding the project's processes the focus lies on participatory approaches as well as social structures and dynamics. Concerning the project's effects, the sustainable use of the water resource and mutual learning are at the centre of this study. The research takes the perspective of Complex Adaptive Systems and specifically Agricultural Innovation Systems. Qualitative methods were applied to collect the empirical data for this study.

The empirical assessment will lead to a better comprehension of social factors influencing the implementation of Research for Development projects as well as an enhanced understanding of the complexity of social systems around a community-managed water resource.

2 Background

2.1 Background Information

Uganda is a landlocked country in central East Africa covering an area of 241,548 sq km (Weltalmanach 2013). The country is generally abundant in water with almost 44,000 sq km covered by open water bodies and swamps. However, these water bodies are unevenly distributed throughout the country. Large parts of the country lie on the African plateau at an altitude between 900 and 1500 m above sea level. Uganda's climate is tropical with two rainy seasons from approximately March to June and December to February (The Economist 2013; Lübbert 2012: 103). The annual rainfall lies between 700 and 2000 mm per year (UBOS 2012: xiv).

In 2012 the population of Uganda was 36.1 million people (The Economist 2013). Uganda's population has been showing high growth rates over the last decades. In 1969 the population was only 9.5 million people. The average growth rate in the 1990s was as high as 3.2 percent. Statistical data indicates that Uganda's population is increasingly becoming younger; in 2002 the proportion of citizens younger than 18 years was 56.1 percent (UBOS 2012: 9). The country's birth rate in 2012 was estimated to be 45.8 births per 1,000 people, which is the world's third highest birth rate after Niger and Mali (The World Factbook 2013). Furthermore, the census of 2002 shows an over-all life expectancy at birth of 50 years (UBOS 2012: 11).

In 2012 the annual gross domestic product (GDP) per capita was estimated to be US\$ 1,400 (The World Factbook 2013). Despite significant growth of GDP per capita in the first decade of the 21st century (UBOS 2012: 59), in 2009/10 still 24.5 percent of Ugandans lived below the poverty line. This percentage is considerably lower in urban areas (9.1 percent) whereas rural population suffers disproportionally from poverty (27.2 percent) (UBOS 2012: 25).

The agricultural, forestry and fishing industries as well as rural development are considered as key factors to overcome poverty and ensure food and livelihood security. In 2011 the agricultural sectors accounted for 22.9 percent of the total GDP employing 65.6 percent of the work force according to UBOS (2012: 41) – other sources state that agriculture accounts for up to 80 percent of the working population (The World Factbook 2013). The total agricultural area is 140,620 sq km, which accounts for 58.2 percent of the total area (FAOSTAT 2013). Uganda's agriculture is predominantly

subsistence and semi-subsistence farming. Plantain bananas, cassava, maize, sweet potato, millet, sorghum and groundnuts are the main food crops grown by smallholder farmers (UBOS 2012: 42).

Livestock forms a significant part of Uganda's food production, accounting for approximately one third the of agricultural output. Cattle, poultry, sheep and goats are important livestock and their numbers have been increasing steadily over the last years. The majority of cattle are kept by pastoral and agro-pastoral communities. Indigenous breeds are still dominant, but exotic breeds are becoming more common (Kisamaba-Mugerwa 2001: 2; UBOS 2012: 45).

2.2 Development Challenge

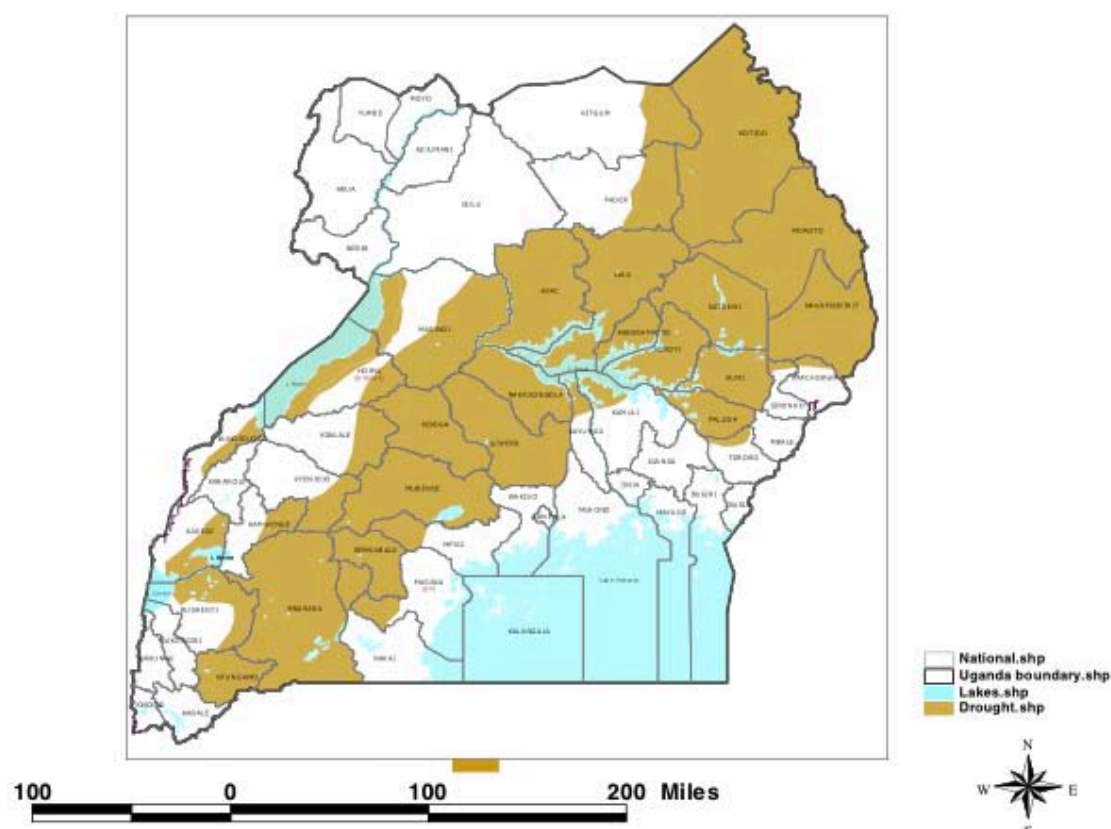
In recent years the agricultural sector has been challenged in its ability to secure livelihoods and contribute to poverty reduction. Even though Uganda's climate is considered generally as tropical and rainy, climate variabilities, and linked to this water vulnerability and stress, negatively affect the agricultural sector. The impacts Uganda's population and agriculture experience due to a changing climate are diverse, and regionally different. Between 1911 and 2000 the frequency of drought periods greatly increased, with Uganda suffering from six severe droughts during that period. The impacts of droughts in Uganda include lower milk production, loss of livestock, crop failure and migration (Barihaihi 2010: 14). During the same period recurring floods destroyed infrastructure and agricultural production, particularly cash crops (Barihaihi 2010: 15).

Climate change has been identified as one of the main global challenges of the 21st century posing stress not only on the environment but also on the economy and societies in general. For the purpose of this study climate change is defined according to the definition provided by the IPCC:

„It refers to any change in climate over time, whether due to natural variability or as a result of human activity“ (IPCC 2007).

Countries in all stages of development are affected by a changing climate. Yet, so-called developing countries and in particular African countries are among the most vulnerable ones (Barihaihi 2010: 8). Estimates indicate that developing countries will have to bear up to 80 percent of the costs of damage resulting from climate change (World Development Report 2010: xx). People's capacities to secure livelihoods are negatively affected by various factors including poverty, the lack of appropriate

infrastructure and technology or insufficient awareness of the problem (Barihaihi 2010: 9).



Land degradation due to overgrazing and felling of trees has worsened the situation (Mpaiwe et al. n.d.: 61). More than 60 percent of all households in the cattle corridor keep livestock. Cattle are an important food source and considered a status symbol and a store of wealth (Turner 2005: 2). Approximately 60 percent of pastoral households do not have sufficient water for domestic and livestock use throughout the year (WWAP 2006: 120). During the rainy seasons water washes the soil from degraded pastures into water holding bodies. This siltation and sedimentation reduce the water holding capacity of water sources. Therefore, in the dry seasons livestock

must travel long distances; which in combination with polluted drinking water puts extreme pressure on livestock owners' livelihoods (Mpairwe et al. n.d.: 61). Hence, even though most pastoralists have a land base, seasonal movements are very common (Turner 2005: 2). In further consequence, due to scarce resources and a changing climate, conflicts between farmers and pastoralists are reported; these conflicts mainly occur when a large number of pastoralists bring their cattle to one water resource at the same time (USAID 2011: 21).

In order to counteract the challenges Uganda faces due to water scarcity, in 1994 the Water Action Plan (WAP) was put in place to ensure sustainable water resource management in the country (GWP n.d.: 2). The WAP focused on establishing a network for monitoring and assessing water resources in the country as well as creating a water resource database and a water permits unit (GWP n.d.: 2). As a result of the WAP, other policies such as the National Water Policy were introduced in 1999 (GWP n.d.: 3). However, there is no holistic approach to water resource development and management since responsibilities are split across ministries (GWP n.d.: 3). Local users were still not included in the decision making process and the government was criticised for maintaining too much control (GWP n.d.: 4). Opposed to this, Saito (2007) illustrates in his work on commons management in Uganda that decentralization of resource management is an appropriate way to meet local environmental requirements. Participatory development goes hand in hand with this decentralization process (Saito 2007: 2). Compared to other so-called developing countries, according to Saito (2007: 3) Uganda's decentralization process started early. Harter and Ryan (2010) show in their study on natural resource management and decentralisation in Uganda that there have been efforts to decentralize natural resource management and to hand over more responsibilities to communities, since the early 1990s. The National Environment Management Authority (NEMA) was founded in 1995 and district environmental authorities were constituted (Hartter and Ryan 2010: 816). NEMA coordinates and monitors environmental issues while district environmental officers and the Local Council are concerned with the planning and management (Saito 2007: 7).

Between 2010 and mid 2013 711 facilities for water for production, covering water for both crops and livestock, have been constructed in Uganda (Ministry of Water and Environment 2013: 93). Facilities constructed include valley tanks (605), dams (28) and fishponds (78). Depending on ownership, these facilities are either privately managed or under community management. Of the 711 facilities 39 percent were under

community management. Community-based management was established for 41 percent of the newly constructed valley tanks. Water user committees were founded for all valley tanks, of which 80 percent were still functional at the time of a compliance visit one to three years after their establishment (Ministry of Water and Environment 2013: 93).

2.3 Development Strategies

2.3.1 Achieving community-based management through development interventions

Supportive policies and external assistance from government actors and NGOs are seen as prerequisite for sustainable community-based management. In Uganda various strategies and projects have been developed to support community-based management and to tackle the challenges Uganda is facing regarding climate change induced water vulnerability.

In a range of countries including Uganda, community-based management has been adopted as a strategy to deal with water vulnerabilities related to climate change. Harvey and Reed (2006: 367) note in their study on community-managed water supplies in Africa that in some areas in Sub-Saharan Africa the concept of community management and ownership is historically rooted. However, this by far does not apply to all communities (Harvey and Reed 2006: 367).

In contemporary literature one can find several different definitions and terms for community-based management. These different designations range from 'Community natural resource management' (CNRM) (Kellert et al. 2000) or 'Community-based natural resource management' (CBNRM) (Ansink and Bouma 2013) to simply 'Community management' (Fonesca and Bolt 2002). Depending on the resource under management further differentiations exist and various terms are used. Specifically speaking of water resources, the concept of 'Integrated water resource management' (IWRM) has been established (Meire et al. 2008: 2). For the purpose of this thesis the term 'community-based management' is used.

Community-based management is not a new concept, but has been in practice for decades, implying that communities have the capability and should be granted the responsibility to manage their own resources. However, since the 1980s the concept has experienced a constant advancement (Blaikie 2006: 1943). As it became apparent that linear transfer of technology approaches did not result in long-term changes in

people's livelihoods and behaviour patterns there was the urge for a more holistic approach to development interventions (Nederlof et al. 2011: 13). The new paradigm to acknowledge farmers' capacity to deal with local problems in further consequence led to *"a shift of responsibility and say from researchers to farmers"* (Nederlof et al. 2011: 13). Governments and NGOs have been especially important in promoting development interventions supporting community-based management since the 1980s and 1990s (Lockwood 2004: 6). Connected to these development interventions were efforts undertaken by many governments to decentralize (water) supply systems and the aim of NGOs to support participatory approaches (Lockwood 2004: 6). For governments decentralising the provision of rural water supply services was an opportunity to relinquish responsibilities and to cut costs for execution and monitoring (Lockwood 2004: 6; Ansink and Bouma 2013: 1). The idea was to shift from a supply-driven approach to a demand-driven one and to create a sense of ownership for local services within the communities (Lockwood 2004: 6). The focus on demand-driven approaches would guarantee the introduction of technologies that better fit local requirements and create new knowledge for all involved stakeholders (Scoones and Thompson 2009: 6). It was recognized that multiple forms of knowledge exist and that *"space for knowledge dialogues which build bridges between different actors, extend networks and create new, shared languages for action and change"* need to be created (Scoones and Thompson 2009: 7).

Community-based management is widely considered a way to ensure sustainable use of resources and socio-economic development (Kellert et al. 2000: 705; Saito 2007: 10). Three main goals of community-based management can be identified: (i) to ensure empowerment and capacity building of local communities, (ii) to increase the efficiency of services and (iii) to lead to a sustainable use of these services (Kiteh 2011: 22). Community-based management thus has the potential to lead to a more equitable distribution of benefits, and empowerment of local actors (Kellert et al. 2000, 709).

Past experiences show that the stakeholders who initiated the development intervention have influence on the long term-performance of community-based management. The International Water and Sanitation Centre conducted a large-scale study in Cameroon, Colombia, Guatemala, Kenya, Nepal and Pakistan on the management of water supplies in over 20 rural communities (IRC 1997). In Nepal community-based management has been established for decades. Community-managed resources are reported to be rather successful (IRC 1997; Lockwood 2004). According to the IRC (1997: 81) communities frequently approach government or

private actors to support the development of such local structures. As a consequence of taking action, communities feel responsible for their resources and manage them in a sustainable way. In contrast to this Oenga and Ikumi (1997: 62ff) report problems with community-based management structures in Kenya. Development interventions to support community-based management are mainly government or NGO driven with limited involvement of communities in the decision-making processes, leading to inadequate performance of the implemented facilities. Based on their observations Boakye and Akpor (2012: 515) stress that the way people are informed about a project strongly affects their participation.

Therefore, four major principles for the successful promotion of community-based management have been specified by Lockwood (2004): (i) participation of community members in the whole process of planning and implementation as well as the long-term operation and maintenance of the managed systems, (ii) communities have control over the whole decision-making process, (iii) community members hold legal ownership or create a sense of it for the managed system and (iv) costs for the system are financially or non-financially shared (Lockwood 2004: 8).

Concerning the planning and management of local natural resources, community based organisations (CBOs) are constantly gaining importance. Due to their organisation structure, which is said to be transparent, CBOs have the potential to facilitate consultative processes (Saito 2007: 11). The formation of committees is a feature inherent in most community-managed systems (Harvey and Reed 2006: 369). In some cases committees are formed as planning committees, facilitating the initial phases of projects developing community-managed structures. Once the structures are in place the planning committees are either converted into committees concerned with operation and maintenance or new committees are formed. For community-based management structures dealing with water resources these committees are generally known as 'water user committees' (IRC 1997: 115).

2.3.2 Participation, social structures and dynamics in development interventions at community level

As seen above participation is a key concept connected to development interventions which promote community-based management. Participatory approaches go hand in hand with the shift from supply- to demand-driven approaches to development interventions (Lockwood 2004: 6).

Various stakeholders can be concerned with development interventions dealing with rural water supply systems. The OECD (2002) provides the following definition of stakeholders:

“Agencies, organisations, groups or individuals who have a direct or indirect interest in the development intervention” (OECD 2002: 35).

Such stakeholders can for instance be members of NGOs, government representatives, service providers or members of local communities (Lockwood 2004: 7). Even though development interventions applying participatory and demand-driven approaches put local communities at the centre (Scoones and Thompson 2009: 4), the concept of communities itself is not undisputed. To some scholars, communities are homogenous groups defined by their geographical proximity, shared interests and internal harmony (Fieluma 2011: 176). Others hold the opinion that this overlooks social differences within communities (Leach et al. 1999: 228). Guijt and Shaha (1998) even refer to this as *“the myth of community”*, suggesting that within communities different groups exist, which might have common as well as opposing goals (Guijt and Shaha 1998 in Fonesca and Bolt 2002: 67).

Harvey and Reed (2006: 368) argue that community participation is a condition for the sustainable use of natural resources since it involves communities in all decision-making processes and ensures that the chosen technology is appropriate in the local context. Three core elements of participation can be identified: (i) it is cognitive implying that different views on understanding reality have to be jointly generated, (ii) it is political as it is a way to empower voiceless stakeholders and (iii) it is instrumental offering alternative ways to approach challenges faced (Mohan 2011: 3f). Boakye and Akpor (2012) show in their study of community participation in the management of water resources in South Africa that decisions need to be *“holistic, integrated and participatory in order to enjoy a wide consensus from stakeholders”* (Boakye and Akpor 2012: 512). Community participation can be initiated either by outsiders or the community itself. Community participation gives communities the control over the

resource and also, if they wish, the choice not to manage it themselves (Harvey and Reed 2006: 368).

Since development interventions do not take place in a social vacuum, social structures and dynamics have to be taken into consideration. As communities are heterogeneous various groups exist. These different groups have to be represented in the participation process to ensure a feeling of agreement for any decision or activity (Fonesca and Bolt 2002: 67). Therefore, *“dealing with dynamics of power and conflict”* is a prerequisite for successful change processes (Leeuwis and Hall 2010: 25). Yet, this does not imply complete avoidance of such dynamics in development interventions but rather finding adequate solutions. Leeuwis and Hall (2010) state:

“Our point here is not that dynamics and [sic!] power and conflict must be prevented. Instead we argue that they are always at play, and that there are more and less productive ways of dealing with them” (Leeuwis and Hall 2010: 25).

In the literature the importance of involving local leaders in a project's activity is repeatedly asserted (Fonesca and Bolt 2002; Boakye and Akpor 2012; Lammerink et al. 1999). Local leaders and other key stakeholders have the potential to positively influence development interventions but also to hinder them if they do not feel sufficiently involved or oppose the projects activities in general (Fonesca and Bolt 2002: 74). Lammerink et al. (1999: 4) emphasise the role leaders have in making change possible:

“If the leadership of a community is committed and receptive to change, the process is likely to proceed smoothly [...], but if the local leaders are too dominant and want to pull all the strings of community life, they can also be counterproductive” (Lammerink et al. 1999: 4).

It is possible that there is more than one leader with a key role in a community. The assessment of the relationship between the different leaders can help to understand the internal power dynamics and prevent conflicts (Fonesca and Bolt 2002: 75). Apart from local government representatives, other leadership structures need to be taken into consideration. For the case of community-managed resources such other leadership structures could include members of management committees. This will help to achieve a broader acceptance of development interventions within a community and to guarantee that the different groups within a community are represented in the participation process (Boakye and Akpor 2012: 514). Fonesca and Bolt (2002) stress:

“Although this is difficult to assess, field staff should show some respect for leadership in the community and refrain from creating a leadership crisis” (Fonesca and Bolt 2002: 75).

In development interventions leadership and power structures should thus be carefully assessed and efforts undertaken to understand the underlying dynamics (Lammerink et al. 1999: 4).

A feature of development interventions applying participatory approaches is that local community members develop a sense of ownership for the process, technology and sustainable use (Lockwood 2004: 8). While this sense of ownership is a prerequisite for any successful development intervention, in interventions concerned with natural resources the aspect of legal ownership also has to be taken into consideration (Harvey and Reed 2006: 371). Legal ownership might influence the creation of a sense of ownership for activities implemented during an intervention. For the case of community-managed resources, ownership can be a complex issue and has to be wholly understood (Harvey and Reed 2006: 371). While the legal ownership of community-managed resources by the community is desirable, it is no prerequisite for sustainability (Fonesca and Bolt 2002: 28). However, the circumstances regarding ownership have to be clear so that communities can develop a sense of ownership for the operation and maintenance of the system (Fonesca and Bolt 2002: 28). There are cases where facilities are located on private land, leading to the community's perception of not owning the facility. To overcome this obstacle Harvey and Reed (2006: 371) emphasise the importance of establishing a sense of responsibility rather than a sense of ownership.

Nchari et al. (1997:13ff) illustrate the case of a community-managed water supply system in Cameroon, initiated by an influential community member, showing some conflicts around internal power struggles and responsibilities for operation and maintenance. For the planning and implementation the community elected a planning committee, which was transformed into a maintenance committee after the construction was finished. However, the community member who initiated the project started to manage the water facility by himself excluding the water user committee members from his decisions. As a consequence the committee stopped working. After some years, community members elected a second water user committee which took over the management of the facility. The initiator of the project then felt left out and did not acknowledge the new committee, which led to distrust and internal conflicts within the community (Nchari et al. 1997:13ff).

Hartter and Rayan (2010) show that local resource management in Uganda is strongly influenced by a combination of national legislation, local circumstances and land

property situations. Uganda had and in some parts still has complex user rights and land tenure systems (Hartter and Ryan 2010: 817). Both privately owned and community-managed water sources exist. Currently there are four different land tenure systems: customary, freehold, leasehold and mailo (Hartter and Ryan 2010: 816). Customary land tenure was mainly in use in pre-colonial times but it is still the most common land tenure system in Uganda and means that local communities collectively manage the land according to their customs (Mugerwa and Nuwagaba 1993: 5; Kyomugisha 2008: 1). While users of customary land do not hold a legal land title, the tenure is generally secure (Kyomugisha 2008: 1). Holding freehold signifies to legally own the land including everything irremovable on this land. This land right is granted indefinitely and gives the owner the absolute right to use the land (Kyomugisha 2008: 1). Opposed to this in the leasehold tenure system a tenant is temporarily, usually between five and 99 years, granted the right over a property. Conversely to the usufruct, the tenant pays rent (Kyomugisha 2008: 1). If existing, both freehold and leasehold can only be approved by Ugandan authorities with the consent of the customary holder (Mugerwa and Nuwagaba 1993: 6). Mailo tenure is a colonial heritage that was initially established around 1900 by the British colonial government and can be seen as quasi-freehold (Kyomugisha 2008: 1).

Apart from the tenure system the local government system influences the management of natural resources. Saito (2007: 10) argues that in Uganda the Local Council (LC) system contributes to the establishment of community-based resource management since the LC system facilitates the interaction between local communities and authorities. It is a hierarchical system with five levels, ranging from village level (LC I), parish (LC II), sub-county (LC III), county (LC IV) up to the district level (LC V) (Saito 2007: 7).

Nchari et al. (1997: 10) argue that in Cameroon 90 percent of the community-based management systems under investigation could not be sustained if the community was not involved in the development intervention. Yet, some challenges connected to development interventions supporting community participation and management have been identified. Blaikie (2006: 1945) detects a major discrepancy between the intentions of development interventions applying community participation and management and their observed performances. In addition to internal constraints like conflicts among community members, external constraints such as poor design, lack of long-term assistance or unfavourable policies can limit the sustainable operation of rural water supply systems (Lockwood 2004: 10). Fieluma (2011) sees the underlying

cause for this shortfall in the approach many projects have taken as it was *“realised that community participation in water programmes was being limited to mobilisation of self-help labour or the organisation of local groups to ratify decisions made by project planners outside the community”* (Fieluma 2011: 174). Mohan (2011: 2) detects a major challenge to participatory approaches in its compulsory integration in development interventions. In some cases participation is merely used as a tool to increase the efficiency of formal development interventions. Yet, participation can also be seen as a transformative agenda, enabling more open-ended development processes or even resulting in profound social change (Mohan 2011: 8). Therefore, it is important to reflect for what reason participation is promoted. Furthermore, social structures and dynamics are relevant in development interventions. Also, it has to be assessed in which way social structures are taken into consideration and for what reasons participatory processes at times do not necessarily translate into practice as intended by development interventions.

2.4 Research Context and Justification

2.4.1 The WATERCAP project

This thesis deals with a sub-project of the WATERCAP project in Uganda. The WATERCAP project is an initiative to address the issue of water resource management with the participation of local communities. It is also an academic partnership between three universities and the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) (WATERCAP 2010: 11). RUFORUM is the coordinating unit, Makerere University (MAK) and Egerton University (EU) in Kenya are the implementing units and the University of Natural Resources and Life Sciences (BOKU) in Austria is supporting and monitoring the project. The Austrian Partnership Programme in Higher Education and Research for Development (appear), is a program funded by the Austrian Development Agency (ADA). ADA administers the three-year project, which started in early 2011. The rationale of the project was to bring together different actors concerned with water vulnerability to jointly work on mitigation strategies and to enhance partnerships as well as improve universities' capacities to put research into practice (WATERCAP 2010: 12).

The project was initiated as universities were repeatedly criticised for not being responsive to the development challenges faced by local communities (WATERCAP 2010: 10). The overall goal of the project is to *“strengthen universities' capacities in*

addressing climate change induced water vulnerability and uncertainty" (WATERCAP 2012: 4). The project proposal strongly emphasises the project's innovative approach and the creation of so-called Innovation Platforms (IPs), in order to facilitate participation processes and therefore, lead to a sustainable uptake of changed technologies. The emphasis is on the interactions between various public and private development actors as well as local communities and to establish or strengthen partnerships between these actors. These partnerships are seen as vital to facilitate joint learning processes and to enable smallholder farmers to mitigate the effects of climate change induced water vulnerability. As a consequence of these partnerships and the lessons learnt, universities gain the capacity and knowledge to improve their curricula and to increase their competence in solving 'grass-root level' problems (WATERCAP 2012: 10). Crop and livestock production were identified as key agricultural domains, being relevant to food security and climate related water vulnerability (WATERCAP 2012: 3). Based on this the project partners in Uganda, together with important local players, selected two local communities to work with and consequently constituted two IPs. These IPs are designed as learning mechanisms on water related issues affecting smallholder farmers. In the IPs, stakeholder appraisals, case studies, identification of water innovation and student attachments were planned. These actions would contribute to the project goals of improving curricula in regard to water stress related issues and of achieving sustainable agricultural development (WATERCAP 2010: 13).

In both IPs 'new' kinds of water use technologies were introduced. While the technologies themselves are not new, it has become apparent that the sole implementation of new technologies, without the consideration of social and cultural aspects, does not result in a sustainable change of water use patterns. The WATERCAP approach is argued to be innovative, and includes multiple stakeholder (WATERCAP 2012). In Rakai district a new water regime to irrigate gardens and fields for domestic as well as commercial use was implemented. In Nakasongola district a new watering scheme for watering livestock was brought into use. The water resource is under community-based management. Due to the scope of this thesis, this study focuses on the Nakasongola IP only. While this thesis looks at social dynamics around the WATERCAP project in Nakasongola, Scherer (2014) analyses technical aspects of the water use technology and its management practises.

2.4.2 Justification

WATERCAP as a Research for Development project applies participatory approaches and deals with a water resource under community-based management.

Reviewing the processes and effects of Research for Development projects like the WATERCAP has the potential to develop a better understanding of the implications such projects have on the livelihoods of the participating people. Hall (2009: 34, 38) stresses the importance to collect and share experiences from research dealing with agricultural innovation and specifically from approaches to successfully organize interactions among stakeholders facilitating agricultural innovation. Durlak and DuPre (2008: 328) call for the examination of the implementation phase of development interventions. Understanding the implementation of a project is key to the accurate interpretation of outcomes and to the assessment of “*the internal and external validity of interventions*” (Durlak and DuPre 2008: 328). To capture the whole picture Rossi and Freeman (1993) suggest to also assess the conceptualization, design and practical effects of development interventions (Rossi and Freeman 1993: 5).

Therefore, this thesis approaches the WATERCAP project from both the conceptualized and the observed levels. Participatory processes as well as social structures and dynamics around the WATERCAP project in the context of the community-managed water resource in Nakasonola are assessed. Thus, influential factors on both the project and the community-based management of the water resource are identified and a better understanding of the project's processes and effects generated.

It is, therefore, necessary to develop a profound comprehension of water related issues in the study area and an understanding of perceptions of different stakeholders. The findings of this study help to identify and analyse potentials and constraints of the current project design, which will contribute to the project's internal learning processes and can also be integrated in future development interventions.

3 Objective and Research Questions

3.1 Objective

The objective of this master thesis is to understand the related processes and effects of the WATERCAP project and to comprehend the social structures and dynamics around a community-managed water resource in Nakasongola.

3.2 Research Questions

It is assumed that participation of all stakeholders is key to long-term adaptation of new technologies and that social structures have the potential to influence development interventions. Moreover, it is anticipated that knowledge, skills and capabilities encourage behavioural changes.

The following research question and sub-questions have been derived from the assumptions and research objective explained above:

How do the conceptualized project processes and effects deviate from the factual project implementation and outcomes?

- Who were the involved stakeholders and in which way did they participate?
- In which way did participation processes outlined in the project differ from the observed ones?
- How were social structures and dynamics at community and project team level considered in the project concept?
- How did social structures and dynamics influence the project? And, in which way did the project intervention affect them at community level, respectively?
- How do the conceptualized changes in knowledge, capabilities and skills as well as behaviour in the community and within the project team distinguish from observed and reported changes?

4 Conceptual Framework

The conceptual framework of this thesis is a set of theories that help to understand social systems and empowerment processes. They all share the view that development is a complex process and that for a successful, long-term change in the system new knowledge and exchange of information are essential. This process-based approach helps to explain social dynamics around both the development intervention and the community based-management of the water resource in Nakasongola.

Knowledge exchange has the potential to lead to behaviour change. Innovation is the diffusion of new ideas and its communication through certain channels at a certain time among the members of a social system (Rogers 2003: 36). It is important to recognize that it is insufficient to 'transfer' knowledge only in one direction but that it flows in all directions due to the interaction of different actors. Analysing experiences from the past it became apparent that new approaches to sustainable development are needed. It is understood that agricultural systems are complex and that linear approaches to development as well as the sole transfer of technologies have not resulted in the intended changes to people's livelihoods (Nederlof et al. 2011: 13). Since the conceptual basis of the WATERCAP project focuses on participatory methods to strengthen partnerships and innovation platforms are conceptualized to be used in order to enhance change processes, these approaches also play an important part for the theoretical basis of this study.

The theories of Complex Adaptive Systems (CAS) and Agricultural Innovation Systems (AIS) frame this study. **Complex Adaptive Systems** have their origin in ecology but have been taken up by various disciplines in both natural and social sciences to apply systemic ideas (Hall and Clark 2009: 9; Miller and Page 2007: 3). In recent years CAS have gained influence for rural development, putting farmers "*at the centre of an evolutionary mechanism used to cope with change*" (Hall and Clark 2009: 7). In this context CAS have four major characteristics. (i) CAS can be defined as systems where a large number of components interact in a dynamic way and exchange information. (ii) Different components send and exchange information in the form of signals or actions. (iii) Rather than reacting to each new situation with a new response, sets of responses are combined into modules. (iv) Over time changes are created which lead to adaptation (Holland 2005: 1). Generally speaking, CAS are non-linear, open and evolutionary, characterized by constant changes and responses to these changes. The individual components are the major antecedents and are all interrelated. Adaptation is

the consequence of components' interactions with each other and their learning from the environment (Holden 2005: 654; Rammel et al. 2007: 10). The components in a system are interrelated and the system itself has to be understood in its entity rather than as the sum of its parts (Hall and Clark 2009: 10). CAS help to explain learning and innovation processes in living systems as well as their characteristics (Amagoh 2008: 6). Due to their evolutionary and adaptive nature, the emergence of innovation is facilitated in CAS (Rammel et al. 2007: 10). Adaptation and innovation capacity take place on a local level but need to draw on a wider base of knowledge, which is institutionally and geographically diverse (Hall and Clark 2009: 7). CAS can also be applied to social systems where the 'components' of the system are the different actors.

Agricultural Innovation Systems have to be understood in the context of CAS, adopting this approach to agricultural systems. Hall et al. (2006) give the following definition of an innovation system:

"An innovation system can be defined as a network of organizations focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behavior and performance" (Hall et al. 2006: 16).

In the concept of AIS innovation is defined as new knowledge and practices that influence economic and social processes. In further consequence this leads to the implementation of new knowledge in the production process of goods and services or to transformations of organisational structures (Spielman 2005: 14; World Bank 2012: 2). The application of knowledge is essential to reach the intended effects (Nederlof et al. 2011: 15). Innovation can either be the effect of spontaneous and radical transformations or long-term developments in the system (Spielman et al. 2009: 400; Kilelu et al. 2013: 67). Furthermore, innovation is the result of interactions among various actors and external influences such as markets and regulations as well as internal factors like values and belief systems (Kilelu et al. 2013: 65). Innovation is not seen as a linear process but rather takes place in a complex system, involving multiple and heterogeneous actors and transdisciplinary perspectives enabling shared learning (Klerkx et al. 2012: 460). Three main levels determine an innovation: new technology, new behavioural patterns and new institutional arrangements (Leeuwis and van de Ban 2004 in Kilelu et al. 2013: 66). Here is important not to limit innovation to technical solutions but to also include institutional changes. This is especially significant in the context of an agricultural innovation as institutional change forms the basis for resilience and flexibility in social systems.

Innovation Platforms (IP) are mechanisms that enhance an agricultural innovation (Kilelu et al. 2013: 65). Nederlof et al. (2011) state:

„The innovation platform approach recognises that complex problems require solutions that come out of interactions between many actors“ (Nederlof et al. 2011: 68).

Kilelu et al. (2013) define an IP as *“a multi-actor configuration deliberately set up to facilitate and undertake various activities around identified agricultural innovation challenges and opportunities, at different levels in agricultural systems”* (Kilelu et al. 2013: 66). IPs are also defined as a *“set of stakeholders bound together by their individual interests in a shared issue, challenge or opportunity, intending to improve livelihoods, enterprises and/or other interests”* (Nederlof et al. 2011: 14). In IPs the different stakeholders communicate and cooperate to facilitate actions to reach a common goal. While the overall objective has to be clear and shared among all stakeholders, their interests may vary (Nederlof et al. 2011: 15). IPs are dynamic and all stakeholders have to agree on rules to facilitate the resolution of conflicts or to ensure functioning decision-making processes. Yet, some stakeholders might be in the position to influence processes according to their interests more than others. Therefore, all groups should be represented in the IP to counteract such power-imbalances (Fonesca and Bolt 2002: 67). IPs can be established at different levels, such as local or national levels, or in different sectors. Independent from the level or sector, IPs apply participatory approaches and ensure transparency (Nederlof et al. 2011: 16). In order to develop an IP, the relationships between the various actors need to be coordinated. Therefore, so-called innovation intermediaries, or brokers, are necessary. The main functions of these intermediaries are to broker linkages between stakeholders, to facilitate knowledge building, to strengthen capacity building and most importantly to enable stakeholders to articulate their demands (Kilelu et al. 2013: 67). Crucial here is that no agent has the overall control over the system but the collective aim is to reduce unwanted effects and increase the chance of desired outcomes (Spielman et al. 2009: 400).

Participation is considered as a key driver for community development (Zadeh and Ahmad 2010: 1). There are various ways to define participation, broadly speaking it can be seen as the involvement of all stakeholders at all stages of a development process reaching from bringing up and formulating the development problem to the implementation and evaluation of the project (Zadeh and Ahmad 2010: 13). Another definition sees participation as a way to mobilize people to *“eliminate unjust hierarchies of knowledge, power, and economic distribution”* (Tufte and Mefalopulos 2009: 4).

There has been growing consensus of the necessity for participation in the early stages of development projects. Collective goal setting enhances the feeling of ownership of projects and facilitates sustainable and relevant impacts. However, this approach to participation does not ensure an ongoing inclusion of all stakeholders in the process of project implementation, and therefore does not necessarily lead to a sense of ownership of new developments by the involved stakeholders (Tufte and Mefalopulos 2009: 4). However, the creation of a sense of ownership for a development intervention can be strengthened by participatory approaches. In development interventions dealing with natural resources the legal ownership might also influence the sense of ownership by stakeholders for the development intervention and thus has impacts on the development intervention itself and its effects (Harvey and Reed 2006: 371).

While at times participation is merely seen as a means to an end of projects, e.g. by increasing efficiency, it can also be an end in itself, resulting in capacity building and empowerment of local communities (Tufte and Mefalopulos 2009: 4). The level of participation determines the effects it has on the project outcome. As early as 1969 Arnstein (1969) suggested a typology of citizen participation. While this typology was initially developed to characterize the involvement of citizens in policy making it may as well be applied to the participation of stakeholders in development projects. Arnstein (1969: 217) argues that the redistribution of power is a prerequisite for real participation. Figure 2 illustrates Arnstein's ladder of participation; comprised of eight levels.

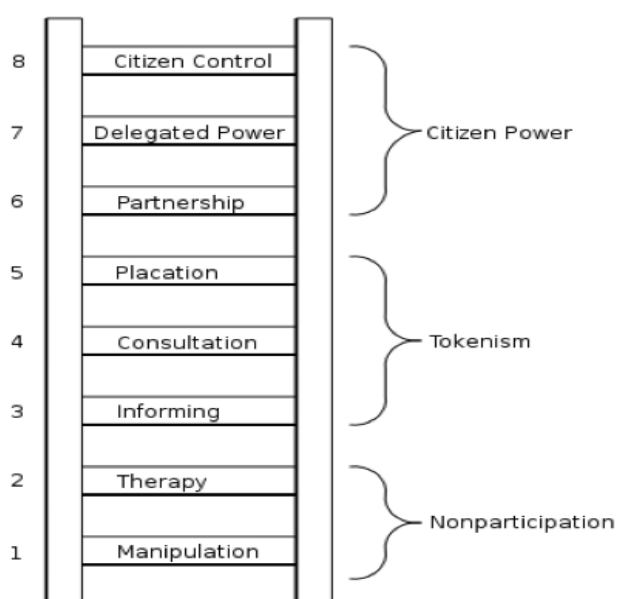


Figure 2. Arnstein's ladder of citizen participation (Lithgow 2004: 2)

The first two spokes 'manipulation' and 'therapy' are not considered to be 'true' forms of participation. It is assumed that their objectives are to give power-holders an opportunity to educate and decide on behalf of participants (Arnstein 1969: 217). The next spokes 'informing', 'consultation' and 'placation' fall under the umbrella term of 'tokenism' suggesting that the voices of participants are heard but not necessarily incorporated in the decision-making process (Arnstein 1969: 218). The upper three spokes are forms of participation allowing for more control over decision-making processes. If actors form 'partnerships', negotiations can be facilitated. When the uppermost two spokes are reached participants have gained the power to actually control processes (Arnstein 1969: 218).

Tufte and Mefalopulos (2009: 7f) also suggest a typology of participation. They identified four types of participation lying on a continuum: (i) Passive participation is considered as the weakest form of participation, where stakeholders in a project only receive information about the project and its activities. (ii) Participation by consultation means that stakeholders provide input and information to researchers who have the control over the further use of this information. (iii) Participation by collaboration is a form of participation where pre-defined goals exist and stakeholder groups have a say in how to accomplish these goals. Here the potential for capacity building and collective learning exists. (iv) Empowerment participation is the 'strongest' form of the identified participation types. Here, stakeholders initiate, contribute and analyse the development process. External and internal partners have an equal say and decisions are achieved through dialogue. Stakeholders are the owners of the process and knowledge exchange is crucial for sustainable solutions (Tufte and Mefalopulos 2009: 7f).

Comparing the typology of participation provided by Arnstein (1969) with the one presented by Tufte and Mefalopulos (2009) suggests that similar stages of participation were identified. Passive participation (Tufte and Mefalopulos 2009: 7) would equal Arnstein's level of non-participation (Arnstein 1969: 217). Both typologies see consultative participation as the next participation level. What Tufte and Mefalopulos (2009: 7) refer to as participation by collaboration classes with Arnstein's levels of 'placation' and 'partnerships' (Arnstein 1969: 218). Finally, empowerment (Tufte and Mefalopulos 2009: 8) can be considered as another form of citizen control (Arnstein 1969: 218).

In this context, **empowerment** is seen as key for the sustainable uptake of new technologies and successful development processes (Friis-Hansen and Duveskog

2012: 414). Empowerment is closely related to the concept of power and human agency. In this case power means control and having the capacity to shape social systems as well as to effectuate change according to own values and beliefs of the change agent (Friis-Hansen and Duveskog 2012: 418). Therefore, empowerment can be described as *“the process of gaining control”* (Sen 1997 in Friis-Hansen and Duveskog 2012: 418). Yet, there are various definitions of empowerment found in the literature. Narayan (2005) defines empowerment as *“the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives”* (Narayan 2005: 5). Friis-Hansen (2004) sees empowerment as *“an advanced form of participation that entails farmers making their own decisions rather than adopting recommendations”* (Friis-Hansen 2004 in Friis-Hansen and Duveskog 2012: 414). Indicators for empowerment can be *“the existence of choice, the use of choice and the effectiveness of choice”* (Friis-Hansen and Duveskog 2012: 418). At the individual level various factors such as available resources, rights and knowledge influence people’s degree of empowerment. Especially the capacity to articulate demand is vital to empowerment and innovation (Friis-Hansen and Duveskog 2012: 415). Working with groups rather than with individuals has the potential to be more effective as collective learning processes and an exchange of information are possible as well as stronger decision-making and planning strategies (Friis-Hansen and Duveskog 2012: 419).

Reflexive Monitoring in Action (RMA) was developed to monitor projects dealing with a system innovation (van Mierlo et al. 2010: 11). Indicators explaining processes and effects can be used to understand innovation and empowerment dynamics in system innovation projects. Process indicators help to identify leverage points in a system (van Mierlo et al. 2010: 69). These leverage points are the condition for learning and coherent institutional change. Additionally, they question current belief systems and values (van Mierlo et al. 2010: 71). Process indicators work at different levels in a system. Indicators for network development focus on the involvement of various stakeholders, the presence of prime movers who stimulate innovation processes, as well as the input of various perspectives and the confrontation of these perspectives. Another set of indicators centres on the interaction among stakeholders. Indicators concerning the system approach look at the questions how institutional change is facilitated in order to reach sustainable development and what are the perceived system barriers (van Mierlo et al. 2010: 71f). In contrast to this, effect indicators comprise the learning and innovation processes themselves. Learning processes are

an important part of effect indicators. They can be divided into three different levels: (i) In convergent learning various actors develop complementary visions and solutions for problems (van Mierlo et al. 2010: 69). (ii) Second-order learning occurs when underlying values and beliefs change fundamentally. It is therefore irreversible (Kezar 2001: 16). (iii) System learning implies the redefinition of structures that are hindering sustainable developments – relating to the learning processes and a changed way of thinking, actions of individuals and systems are transformed. Additionally to changes in thinking and acting, institutional changes are required (van Mierlo et al. 2010: 69f).

Based on this theoretical background an **analytical framework for this thesis** was developed. Table 1 illustrates this framework. The theories of CAS and AIS are used to see the WATERCAP system in its complexity and to explain the dynamics of social change. For the purpose of this study the conceptual level of the WATERCAP project was compared to its observed and reported implementation (cf. horizontal division of the analytical framework). Actors involved in the project were anticipated in advance according to stakeholder groups suggested in the literature (researchers, local government representatives, advisory service-providers, non-governmental organisations and community members and community organisations) (Nederlof et al. 2011: 14; Lockwood 2004: 13). For the purpose of this study, the group 'local key informants' replaced advisory service-providers. Since this research is concerned with a source used for watering livestock, livestock owners were introduced as stakeholder group.

Based on the RMA framework (van Mierlo et al. 2010), this thesis also divides the indicators into processes and effects. Even though not all indicators suggested by the RMA framework are applied, this separation facilitates the identification of leverage points for facilitating innovation as well as learning processes and the resulting changes. Regarding the underlying processes and driving factors of the project the focus of this study is on participation processes and social structures and dynamics. The four types of participation suggested by Tufte and Mefalopulos (2009), with the additional form 'no information flow', were applied as five categories for participation. Since the project is not operating in an empty space but encounters social structures and dynamics, these structures and dynamics were assumed to influence the project. The WATERCAP project in Nakasongola district is concerned with a community-managed water source. Land tenure and power structures have been identified as factors strongly influencing the dynamics of community-based management (Fonesca

and Bolt 2002; Harvey and Reed 2006; Leeuwis and Hall 2010). Therefore, the 'land tenure system' and the 'power to influence' were established as categories.

As linear knowledge transfer and the sole introduction of new technologies are insufficient and inappropriate for long-term changes in social systems (Nederlof et al. 2011: 13), new capabilities and behavioural change are needed. Therefore, the effects or outcomes of the project were divided into new knowledge, skills and capabilities on the one side and changed behaviour on the other side, which is in line with the indicators of thinking and acting suggested by van Mierlo et al. (2010). New knowledge and skills include sustainable water use and improved training approaches. Changed behaviour is analysed in terms of changed management practises, including the use of a new water management technology and a new management organisation, as well as improved partnerships among stakeholders.

Table 1. Analytical Framework (compiled by author)

| Spheres | Actors | Processes | Effects |
|------------------|--|---|--|
| Conceptual Level | <ul style="list-style-type: none"> - WATERCAP Project Staff - Local key informants - Livestock owners - Local Government - other development actors (e.g. NGOs) | <ul style="list-style-type: none"> - Participation: <ul style="list-style-type: none"> - No information flow - Passive Participation - Consultative Participation - Collaborative Participation - Empowerment Participation - Social structures and dynamics: <ul style="list-style-type: none"> - Land tenure system - Power to influence | <ul style="list-style-type: none"> - New knowledge, skills, capabilities: <ul style="list-style-type: none"> - Sustainable water use - Improved training approach - Behaviour: <ul style="list-style-type: none"> - Changed Management Practices - Enhanced partnerships |
| Observed Level | <ul style="list-style-type: none"> - WATERCAP Project Staff - Local key informants - Livestock owners - Local Government - other development actors (e.g. NGOs) | <ul style="list-style-type: none"> - Participation: <ul style="list-style-type: none"> - No information flow - Passive Participation - Consultative Participation - Collaborative Participation - Empowerment Participation - Social structures and dynamics: <ul style="list-style-type: none"> - Land tenure system - Power to influence | <ul style="list-style-type: none"> - New knowledge, skills, capabilities: <ul style="list-style-type: none"> - Sustainable water use - Improved training approach - Behaviour: <ul style="list-style-type: none"> - Changed Management Practices - Enhanced Partnerships |

5 Methods

5.1 Research Design

Based on the overall objective of this research to draw a comparison between the conceptual level of the WATERCAP project and its observed processes and effects, an analysis of the project intervention was carried out. As the study attempts to understand the dynamics around the introduction of a new water use technology, it is necessary to capture the diversity of different perspectives on the process (Flick 2009: 16). Therefore, the focus is on the distinct perceptions various actors in the project have on its implementation. According to the Oxford English Dictionary (n.d.) perceptions are „*the way in which something is regarded, understood, or interpreted*“. For the purpose of this thesis perceptions are defined as subjective indicators that reflect how individuals conceive the introduction of the new water use technology. Perceptions influence personal beliefs and therefore form the basis for decision-making and actions. Perceptions cannot be measured quantitatively but have to be understood in their complexity. Rather than following a strictly linear process the research process of this study is circular. This means the single stages of the research process are interdependent and the research process itself is open to adaptation. Permanent reflection assures that each research step is seen in the light of the other research steps and the collection of data as well as its analysis are appropriate for the research question (Flick 2009: 90ff). This process-orientated understanding facilitates dealing with complex issues. However, this research is based on hypotheses, which were generated at the outset of the research process. Based on the need to comprehend the complexity of the research question qualitative methods were applied. Qualitative methods have the potential to deal with multi-dimensional phenomena and diversity as well as to explain social processes (Lamnek 2010: 30ff).

The complexity and diversity of the dynamics influencing the new water use technology cannot be fully understood by just applying one indicator. For this reason, triangulation was applied. Triangulation enables to view an issue under research from different perspectives and allows the combination of different sorts of data. In further consequence this should lead to a better knowledge of the system and its linkages (Flick 2009: 445). There are different types of triangulation such as data, investigator or methodological triangulation. Despite this variety, in this thesis mainly methodological

triangulation was applied, which means that different methods are used to produce data (Flick 2009: 444).

5.2 Study site description

As mentioned above the WATERCAP project worked with two IPs in Uganda. This research is based on a case study of the IP in Wanzogi and Kanyonyi Villages in Wanzogi Parish, Kalungi Sub-County in Nakasongola District. Figures 3 and 4 show the location of Nakasonola district and Wanzogi parish and the according coordinates.

Nakasongola district is located in the north of Uganda's Central Region. The district covers an area of 3,510 sq km (UBOS 2012: 82) and in 2012 had an estimated population of 156,500 people (UBOS 2012: 103). Kanyonyi village has an estimated population of about 1000 people (Sekayise pers. comm.). The next bigger centre is Nakasongola town. Kalungi is the closest trading centre to Kanyonyi and Wanzogi where basic services are offered. There is one primary school servicing Kanyonyi and Wanzogi villages. Baruli is the dominant ethnic group in Nakasongola region, who according to the 2002 census make up 0.6 percent of total Ugandan population (UBOS 2006). Polygamy is a common practice in the area with men usually having several wives. Each wife has her own home and the husband temporarily stays at these different homes (Sekayise pers. comm.).

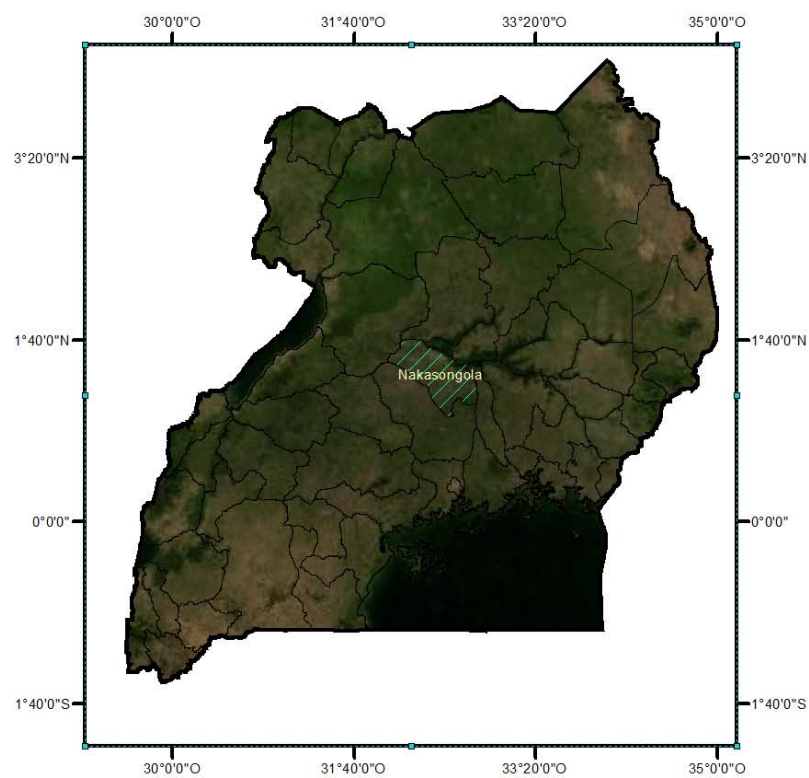


Figure 3. Nakasongola district (hachured) in Uganda (GADM: 2014)

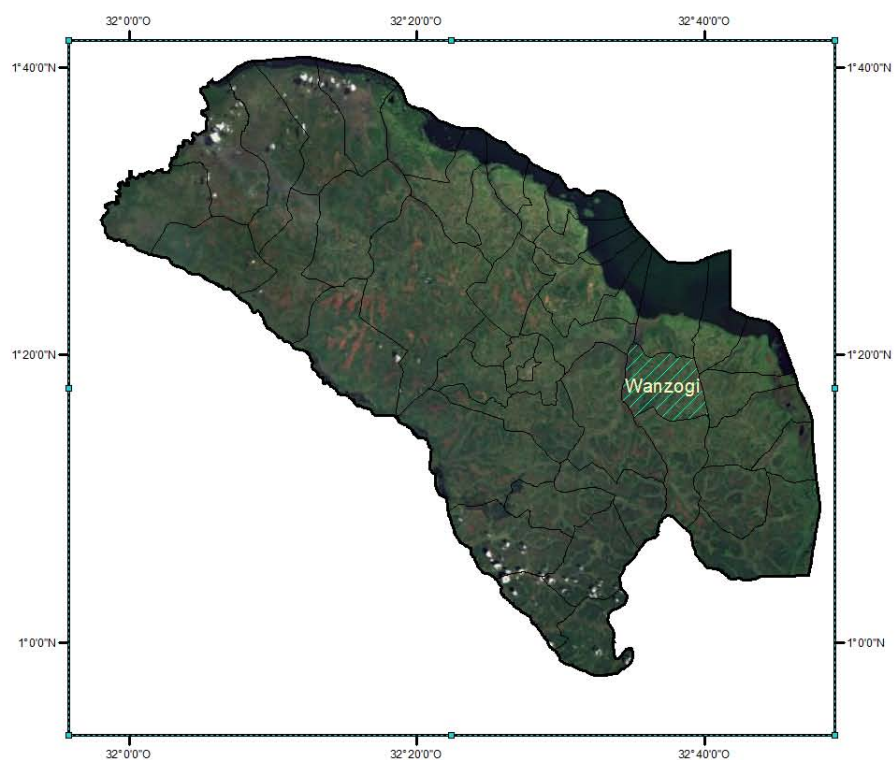


Figure 4. Wanzogi parish (hachured) in Nakasongola district (GADM: 2014)

The main crops in the region are sweet potatoes, cassava, maize, millet and to some extent plantain bananas (UBOS 2012: 159). While crops are cultivated mainly for household consumption, almost two thirds of the district's population keep cattle as a major agricultural activity (Nakasongola District Council and NEMA 2008: 2). The Nile river basin and Lake Kyoga are the two most important water resources in Nakasongola district (Guarduño-Velasco 2001). As the study area is located in the so-called cattle corridor the climate is generally dry with two rainy seasons from March to May and August to November. Scherer (2014: 50) plotted the average precipitation per year in Wanzogi based on data from NASA and FAO, which is illustrated in figure 5.

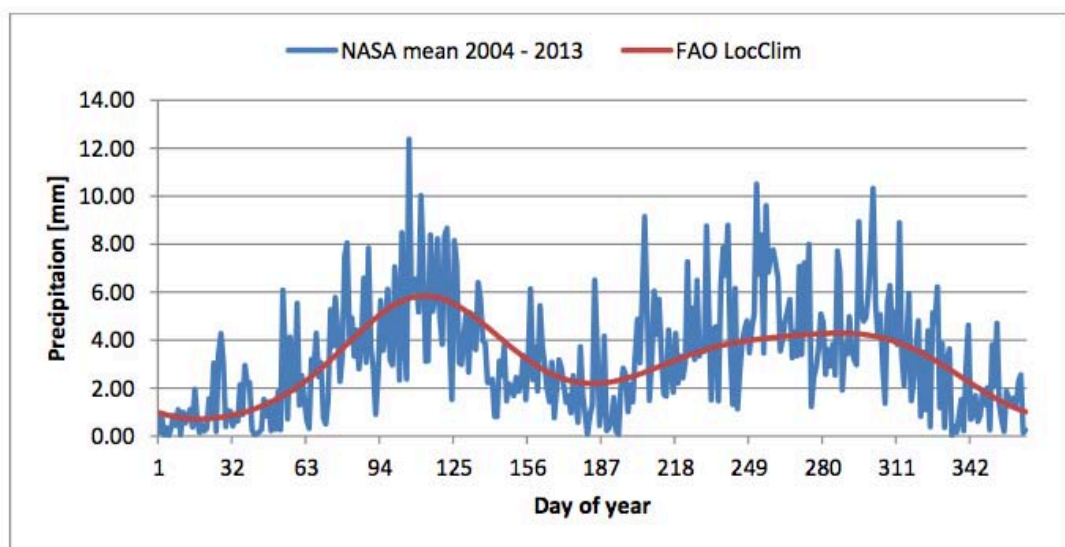


Figure 5. Precipitation in Wanzogi (Scherer 2014: 50)

In Nakasongola district 78 percent of the population have access to improved water sources (Ministry of Water and Environment 2013: 26 Annex). In this context access is defined as the percentage of rural population within the radius of 1.5 km of such a water facility (Ministry of Water and Environment 2013: 49). Nakasongola is among the ten districts most poorly performing with regards to the functionality of rural water facilities. At national level the percentage of water facilities functioning in 2013 was between 80 and 84 percent, compared to functionality of only 66 percent in Nakasongola (Ministry of Water and Environment 2013: 50). Nakasongola district is equipped with 142 valley tanks (Ministry of Water and Environment 2013: 26 Annex). Regarding water for production the Ugandan Ministry of Water and Environment carried out some workshops to sensitise local communities about the importance of participatory approaches for the implementation of water facilities, access rights and

operation and maintenance as well as the effective utilisation of such facilities (Ministry of Water and Environment 2013: 92).

5.3 Data Collection

As the research questions address various issues a set of different qualitative tools was used to collect data. This set of methods is in line with the principles of qualitative research, ensuring openness, flexibility and reflexivity (Flick 2009: 14; Lamneck 2010: 19).

Literature review

Secondary data was collected from scientific journals, books and grey literature such as WATERCAP project documents. This was done especially in preparation for the field stay and facilitated the planning phase. However, a comprehensive literature review accompanied the whole research process. Data for the analysis of the conceptualized processes and effects of the project was collected from the project proposal. Additionally, the project's first annual progress report was analysed to get a better understanding of the project implementation.

Mapping

Stakeholder maps are a low-cost tool to visualize power structures, relationships between groups of people and their degree of involvement (Schiffer and Hauck 2010: 231). In a first research step different actors involved in the project were asked to draw maps of the project environment. Maps were drawn by individuals and also during a group exercise. These maps ensured that no relevant actors were overlooked by the researcher and left out in the research process. Furthermore, the group exercise was a good opportunity to observe interactions among the different actors (cf. Participant Observation). The different maps were photographed, which enabled a later comparison and analysis.

Semi-structured interviews

Qualitative, semi-structured interviews formed the major data collection tool of this study. Semi-structured interviews are considered to provide a profound understanding of social processes and dynamics (Atteslander 2010: 142). The interviews were conducted with the stakeholders involved in the project. An interview guideline was developed and the interviews applied open-ended questions. This guiding question framework was designed prior to the field stay. It was adapted and revised continuously in the course of the research process. The interviews allowed exploring

personal notions of stakeholders and their opinions about the development intervention in depth. The interviews were held in English or, in Luganda and English with the assistance of a translator. With the consent of the interviewees the interviews were audio-tapped and later transcribed. Only in two cases the permission for recording was denied. These two interviews were protocolled by the interviewer during the interview.

Participant observation

Observation was a tool applied constantly during all stages of the research process. In this case the observation was open and unstructured as the observation did not follow an exact plan but rather depended on the actual situation, providing a certain degree of flexibility and openness (Atteslander 2010: 88). Observations are a valuable tool to gather additional insight to aspects that were or could not be addressed during interviews as well as to verify or falsify statements made during interviews. The observations were noted in a research diary, which enables an ex-post analysis of the generated data and reflection of the research process (Flick 2009: 298).

Stakeholder Workshop

The aims of the workshop were many-sided. On the one hand important issues raised during the interviews were discussed and a dialogue between the various stakeholders facilitated. On the other side it was an opportunity to give feed-back and return preliminary findings gathered during the research process to the local community. Finally, it also served as a triangulation step as participants could react to the research findings and open questions could be answered (Flick 2009: 197). After the consent of all participants was given, the stakeholder workshop was audio-tapped and later transcribed.

Visits of other projects and valley tanks

Additionally to the participant observation in Wanzogi and Kanyonyi six other valley tanks, both privately owned and community-managed, were visited in the district. Also the local office of the NGO World Vision in Nakasongola town was visited and an informal conversation with World Vision staff carried on about their activities in the area. The purpose of these visits was to complete the picture regarding the local water situation.

5.4 Sampling

As the exact extent of the group of livestock owners using the valley tank was not known in advance gradual selection was applied and the sample size was not defined in advance. Here the focus was not on getting a representative sample of the general population but rather on involving people affected by the project (Flick, 2009, 91). The selected individuals had the potential to give new insight into the subject. The data collection process was stopped when no additional data could be found (Flick 2009: 119). It was decided to select interview partners in a purposeful manner. This means that interviewees should have the necessary knowledge about the project, time to participate and the ability to reflect the issue.

The semi-structured interviews were conducted in Kampala at Makerere University and RUFORUM as well as in Nakasongola district. In total 45 interviews were conducted over a period of three months. The respondents can be placed in five groups. Table 2 shows the groups and the associated number of interviews.

Table 2. Actor groups and corresponding number of conducted interviews

| Group | Number of Interviews |
|---|----------------------|
| WATERCAP Project staff | 8 |
| Key informants Wanzogi/Kanyonyi villages | 8 |
| Livestock owners | 19 |
| Local Government members | 7 |
| Project Staff previous Makerere project | 3 |
| Total | 45 |

Five WATERCAP project staff members were interviewed at the beginning of the research process. This offered valuable insight into the project process and its implementation. At the end of the research process one member of RUFORUM and one leading scholar at Makerere University were interviewed for a second time to clarify open questions. Additionally, one project staff member from BOKU University was interviewed after returning to Austria, leading to a total number of 8 interviews.

Key informants of the WATERCAP project in Wanzogi and Kanyonyi villages were identified with the help of local leaders. Five members of the two committees responsible for management and maintenance of the community water resource were

asked about their opinion about the project and their involvement. Additionally, three widows of the presumed owner of the land where the valley tank is located were interviewed.

Interviews with livestock owners using the valley tank were at the core of this study. The 19 interviews with livestock owners focused on the individual perceptions on the implementation of the WATERCAP project and on the community managed water resource in general. Due to time and financial limitations only livestock owners in Kanyonyi and Wanzogi villages were interviewed. While these livestock owners use the valley tank on a regular basis during dry season, an unspecified number of livestock owners from surrounding villages come to water their animals occasionally from the Wanzogi valley tank during the dry spell. Furthermore, one livestock owner in Wanzogi village who used to water his animals from the community valley tank but recently excavated his own valley tank was interviewed.

Members of the local government were interviewed to get a better understanding of the main issues around cattle keeping and water use in the area. Furthermore, these interviews addressed the interaction between the local council and the university driven WATERCAP project.

In 2008 a team from Makerere University worked with the community in Wanzogi and Kanyonyi. Three members of the team were interviewed and asked about their experiences with the local community and the communication between their team and the WATERCAP project team.

Each interviewee was allocated a combination of the associated group label and a successive digit according to the chronology of the interview date, therefore the interviews are anonymous. If a respondent was interviewed twice, the auxiliary 'a' or 'b' signalizes the two different interviews. Since the majority of interviews in Wanzogi were conducted with the help of a translator, the quotations from these interviews are re-quoted in third person. Statements from the stakeholder workshop are merely indicated as 'Stakeholder workshop' as usually several statements were translated at once and it was not possible to reconstruct which of the participants made particular statements.

In Wanzogi and Kanyonyi a map of the project environment was drawn in a group exercise with one randomly selected livestock owner, the local leader of Kanyonyi village and two local key informants. WATERCAP project staff drew maps of the project system during individual interviews.

As a final research step a stakeholder workshop was held with around 15 main actors next to the valley tank.

5.5 Data analysis

The process of data analysis was strongly guided by the research question and the analytical framework of this study. Hence, the research question was constantly kept in mind, reflected upon and where necessary adapted and made more specific (Kuckartz 2012: 21).

The analysis of verbal and notational data such as semi-structured interviews, the stakeholder workshop and the research diary, followed the principals of a qualitative content analysis. The content analysis conformed to the approach suggested by Mayring (1985). In this case the process of data analysis is a constant work with the recording units (e.g. interview transcripts, project proposal) (Kuckartz 2012: 47). The analytical process is systematic but open for iteration and feedback (Kuckartz 2012: 50). In a first step the single cases were analysed and summarized (e.g. a single interview transcript). In a second step the individual cases were compared and examined for similarities and differences (Kuckartz 2012: 36).

The most important part of the data analysis is the formulation of categories. Categories help to classify the material and therefore facilitate its analysis. There is the need to formulate accurate categories that fully cover the material without overlapping (Kuckartz 2012: 42). There are different approaches to categorisation. In this study a hybrid form of deductive and inductive categorisation was applied. Based on the analytical framework, the interview guideline and the previous knowledge gained during the research process, main categories were formulated prior to the actual data analysis. As this study compares the envisioned and observed effects and processes of the WATERCAP project the components of the analytical framework presented in table 1 (page 25) were used as main categories for the coding process. As a second, inductive step, these main categories were further developed and sub-categories drafted during the ongoing data analysis (Kuckartz 2012: 68).

The qualitative data analysis software Atlas.ti (Version 7) supported the data analysis. Atlas.ti is a software package widely used in qualitative data analysis. A set of tools enables and facilitates the identification, marking and sorting of text blocks (Larcher 2010: 6). Atlas.ti is based on the core concept of hermeneutic units (HU). The HU combines every aspect related to a research project (e.g. collected data, analytical

framework etc.) to an inseparable unit. At the text-level the data is structured and coded as well as memos are written. At a conceptual level the relations between different parts can be visualized and interpreted (Larcher 2010: 7). Even though this study follows a qualitative design the use of qualitative data analysis software also allows for 'quasi-quantifications', such as statements about predominant or repeating opinions by interviewees (Kuckartz 2012: 18).

Visual data such as maps were compared and differences examined. The output of the individual interview partners from the WATERCAP team were combined and summarized to one project map. The analysis of the different maps served to get a comprehensive picture of the project system and its stakeholders.

6 Results

6.1 General information and characteristics of respondents

General information on the project's activities

The water structure under investigation is a valley tank located on the border between the two villages Wanzogi and Kanyonyi. To avoid confusion it has to be mentioned at this point that in the local context such valley tanks are often referred to as dams. The valley tank was fed by rainwater used to provide water for domestic and livestock use. This valley tank has been in existence since the late 1960s. Traditionally cattle were watered in little containers made of mud that were constructed next to the valley tank and filled manually. In 2008 a research team from Makerere University excavated a second valley tank next to the old one in order to increase water availability. Figure 6 shows a traditional trough made from soil.



Figure 6. Traditional water trough (author 2013)

As part of the WATERCAP project a new concrete trough for watering livestock was built. To deliver water from the valley tank to the trough a petrol powered pump was purchased. Additionally, the old valley tank was de-silted and its slopes banked up, which further improved water availability. Figure 7 shows the new trough and figure 8 the valley tank after it was de-silted. Initially the two valley tanks were linked via channels. In order to improve water quality the two valley tanks were disconnected. Furthermore, WATERCAP suggested separating the two tanks according to domestic

and livestock use, which further increased hygienic standards. Barbwire to fence the catchment area and plants to support the fence also were purchased as part of the project.



Figure 7. Valley tank in Wanzogi and Kanyonyi village (author 2013)



Figure 8. Local cattle drinking from the new trough (author 2013)

Characteristics of respondents

As mentioned in chapter 5.4 Sampling interview partners can be divided into the five groups 'WATERCAP staff', 'livestock owners', 'local government representatives', 'key informants' and 'previous project staff'. Among the six interviewees from the WATERCAP staff group, two members of RUFORUM, three from Makerere University and one from BOKU University were interviewed. The WATERCAP project coordinator,

who was working for RUFORUM, and one RUFORUM employee assisting the project were questioned. From the implementing team from Makerere University, the project's principal investigator, the project's engineer and the co-investigator from the University's Department of Agricultural Extension Education were interviewed. The interviewee from BOKU University was a project employee. Since the team members from Makerere University were granted the responsibility to implement the project on site they are referred to as 'implementing unit'. Accordingly, the two members from RUFORUM are the 'coordinating unit'. The terms 'project staff', 'project team' or 'project members' apply to the whole WATERCAP project team. 'Project partners' refer to stakeholder groups considered in the project proposal, such as local government representatives or members of NGOs (excluding local community members, who form a separate important group).

In total 28 interviews were conducted with people living in Wanzogi or Kanyonyi; of these, 19 interview partners were livestock owners, two widows of the late supposed landowner and five committee members (seven key informants) as well as two local government representatives. Even though local government representatives as well as local key informants form separate groups due to their different roles within the community, these two local government representatives and seven key informants also live in the community and own cattle that are using the valley tank.

Interview partners in Wanzogi and Kanyonyi village lived in households with three to 20 household members, with an average household size of nine people. On average cattle keepers owned 22 animals, with herd sizes varying considerably between three and 80 head of cattle.

Since the valley tank is located on the border between the two villages Wanzogi and Kanyonyi, livestock owners from both villages were interviewed; the majority of respondents were from Wanzogi village as this also reflected the distribution of valley tank users between the two villages (Key informant 6 pers. comm.). Accordingly, the village leaders of both Wanzogi and Kanyonyi were interviewed. The other interview partners in the group 'Local government representatives' were agents of different levels of the local government, namely the LC III chairperson, the chairperson of the sub-county and the parish chief as well as the district engineer and the veterinary officer at the sub-county.

As mentioned above three widows of the presumed landowner were part of the group 'key informants'. Here the special double role of one widow, who is also the vice

chairperson of the water user committee, has to be pointed out. Also, the respective chairpersons and secretaries of the water user and the livestock committees as well as the treasurer of the livestock committee were considered as key informants.

Water and livestock in Wanzogi and Kanyonyi

Most livestock owners kept local or, less commonly, crossbred breeds, only one interview partner declared to own an exotic bull (Livestock owner 7). This was in line with information given by local government representatives, according to which 80 to 90 percent of cattle were still local breeds (Local government representative 6). However, local government representative 5 expressed a preference for exotic breeds and generally recommended them to local livestock owners, since their milk production was higher compared to the ones of local breeds and therefore have the potential to create more income. Yet, he was well aware of the increased need for drugs for exotic breeds, an input that remained unaffordable for most local livestock owners (Local government representative 5). In addition to cattle keeping, most livestock owners pursued non-farming related occupations such as crafting or trading.

While the water user committee had been operating for several years, the livestock committee was formed only two years ago (Key informant 3). Both committees had seven members who had been elected by community members during a joint meeting. Interviewees claimed to have a monitoring system, which enabled them to sanction committee members in case of ineffectiveness (Key informant 6). Yet such sanctions had never been applied and members were elected for an unspecified period of time (Livestock owner 8). Local government representatives 2 and 6 saw this as a major constraint to functioning management structures due to this lacking rotation. In their opinion committee members should be (re-) elected at least every 2.5 to three years. At the time of research there were no bye-laws in place, which, according to local government representative 6, is a situation which should be changed. The water user committee was concerned with livestock as well as domestic water use at the valley tank and therefore had more responsibilities than the livestock committee, which was responsible for issues around water for livestock (Key informant 2). Respondents explained the reason for the establishment of the livestock committee in various ways. The livestock committee was established after some livestock owners expressed their concern that the water user committee was not sufficiently representing them, as the water user committee was not exclusively concerned with water for livestock (Stakeholder workshop). In another opinion the water user committee was not

functioning and the livestock committee emerged as a consequence of this incompetency (Key informant 5). The two committees have different responsibilities, though during interviews not all valley tank users were fully aware of the distribution of duties between the two committees. During the final stakeholder workshop responsibilities of the two committees were double checked and verified. The water user committee's principal duty was to maintain water quality by putting up a fence, preventing animals and people from falling into the water as well as slashing the grass around the tank to avoid plant residues dropping into the water. In contrast, the livestock committee was responsible for maintaining the fence, the new pump and trough. Moreover it informed community members about meetings and pressing issues as well as ensured that all animals watering from the valley tank are de-wormed and sprayed against diseases (Stakeholder workshop)¹.

Water availability is characterized by two rainy seasons in the region. Respondents' descriptions of the pathway of available water varied slightly from respondent to respondent, though they generally matched the distribution of precipitation in the area (cf. figure 5 page 29). Water scarcity was a challenge for livestock owners from approximately late November to late March (Local government representative 7). During the rainy season between April and May, run-off water was collected in small manually excavated or natural water reservoirs referred to as ponds. Livestock owners reported unanimously to have such small ponds on either their own or their neighbours' land which they could access. As soon as the ponds dried up, livestock owners started watering their animals from the valley tank. At times, livestock owners went back to using their own ponds once the second rainy season began. When the ponds had run dry again they started using the valley tank once more (Livestock owner 9).

The sole reason for livestock owners using this particular valley tank was its location. For all respondents it was the closest valley tank and more importantly it was the only communal valley tank in the parish (Local government representative 4). When the valley tank had drained livestock owners used various alternatives for watering their animals. A common strategy applied by livestock owners was to temporarily migrate to lake Kyoga (approximately 10 km). Associated with this migration and subsequent exhaustion, each year a considerable number of animals sweltered (Livestock owner 8). Livestock owners who could afford to pay for watering their animals used private

¹ For detailed information on management practices concerning the valley tank refer to Scherer (2014).

dams in the area (Livestock owner 3). Small herds could use water from boreholes in the two villages. There it depended on the severity of the dry spell if and how much livestock owners had to pay (Livestock owner 9). Other livestock owners took their animals to communal valley tanks in neighbouring sub-counties (Livestock owner 11).

One major challenge regarding water availability was the increasing private land ownership and the ongoing process of land fragmentation. Related to that were restricted herds' movements, declining areas for pastures and increasing degradation (Previous project staff 1). This process led to individual initiatives. For instance livestock owner 19 decided to excavate a private dam on his land. Previously he took his animals to the valley tank but since his farm was located in a very remote area, there was no clear passage and he had to pass through several private farms to reach the valley tank. His cattle and the herds of ten other families used his private dam (Livestock owner 19).

6.2 Processes

While the chapter is divided into ‘Participation’ and ‘Social structures and dynamics’, both sections also address conflicts that arose during the planning and implementation of the project. Some conflicts emerged exclusively in consequence of the project; others were rooted in existing circumstances and were exacerbated during the course of the project. The project proposal itself contains neither information on conflicts that could occur in the course of the project nor on existing conflicts that could influence the project. Hence, no strategies how to deal with such possible areas of conflicts were preconceived.

6.2.1 Participation

This chapter examines the research sub-questions: *Who were the involved actors and how did they participate? In which way do participation processes outlined in the project differ from the observed ones?*

6.2.1.1 Conceptualized participation

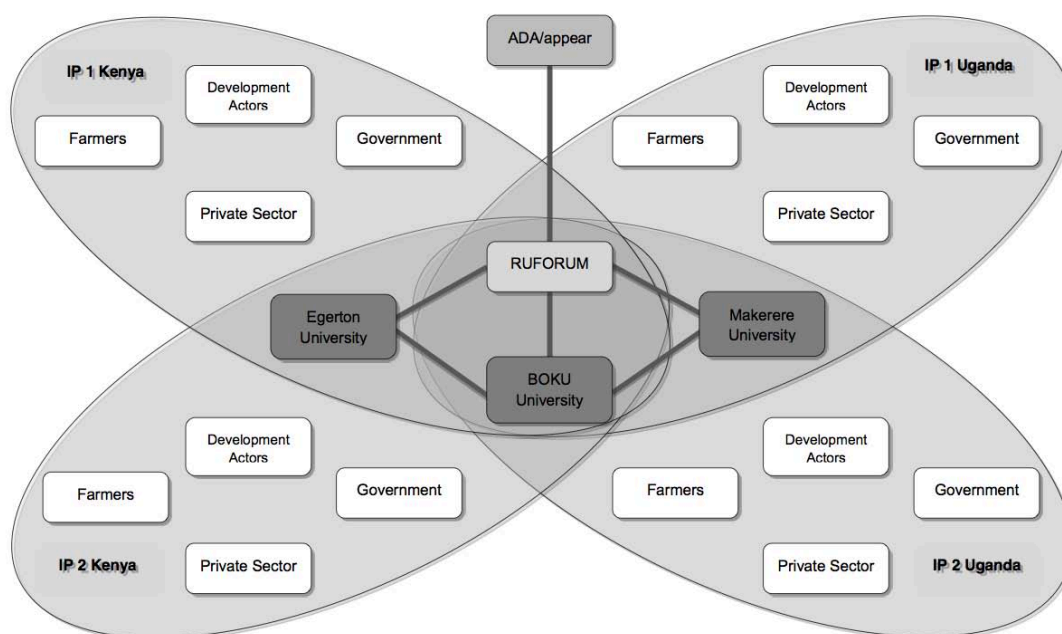


Figure 9. Conceptualized WATERCAP project system (compiled by author derived from WATERCAP 2010)

Figure 9 visualizes the WATERCAP project system. The various actors formed two IPs in each country. While the project implemented activities in Kenya and Uganda, this thesis is only concerned with Ugandan activities and here exclusively with IP 1. The universities are engaged with other development actors *“to jointly develop strategies and practices for mitigation of climate change induced water stresses especially in smallholder farming”* (WATERCAP 2010: 12).

The two African Universities are members of RUFORUM and both have longstanding histories of cooperation with BOKU University (WATERCAP 2010: 8). Little information on the exact of the envisaged roles of the different project partners could be found in the project documents. RUFORUM as the coordinating unit directly engaged with the three universities as well as with the Austrian donor agency. It was agreed that the Austrian donor agency would directly transfer the project money to RUFORUM, which forwarded the money to the involved universities. Within the countries' budgets, no further designation towards the particular IPs was made in advance, allowing for some flexibility during the implementation (WATERCAP staff 5). The overlapping of the four IPs in Figure 9 indicates the involvement of RUFORUM and the three universities in the different IPs. Also, in the project proposal the development of a common vision among partners was considered crucial:

„A key feature of the consortium is that the partners have been keen on and will continue to develop a common vision on concepts and approaches to networking, partnerships and higher education research, rules of partner engagement, rules and responsibilities of university teams and the PCC [Programme Coordinating Committee], researchers, lecturers and other stakeholders“ (WATERCAP 2010: 18).

The intention of the project was to work closely with farmers, locally relevant development actors, the private sector and local government representatives (WATERCAP staff 2). While the concrete project execution was left to the two African universities, *“the final beneficiaries and clients of the project (development partner organizations, ministries, farming organizations) will be enjoined accordingly to contribute to the project insights”* (WATERCAP 2010: 18). NGOs as development actors were perceived as important partners for universities since they might have had higher acceptance levels within local communities than universities that would come in as new players (WATERCAP staff 2). Furthermore, NGOs had the potential to advice new projects, introducing them to the communities and facilitating linkages between actors (WATERCAP 2010: 11). The project proposal conceptualized the whole process of planning and implementation as well as the monitoring and evaluation phase to be consultative, involving all stakeholders at all stages of the project (WATERCAP staff

1b; WATERCAP 2010: 22). The project proposal stressed the importance of participatory approaches to ensure a sense of ownership for all project partners (WATERCAP 2010: 22):

„All through participatory approaches have been adopted [sic!] and will be used to maximize on stakeholder comparative advantages and encourage ownership in South and North and also benefit from economies of scale and scope with balanced ownership between the partners” (WATERCAP 2010: 22).

Using a demand driven approach and involving all stakeholders would guarantee sustainable partnerships, fairness as well as a sustainable shift in technology (WATERCAP 2010: 22; WATERCAP staff 1b). The need for a stakeholder analysis during the planning phase (WATERCAP 2010: 22), as well as the need for clear communication structures during implementation, were stressed (WATERCAP 2010: 28). For this purpose the idea was to consult the community about their needs and challenges and to jointly find technological solutions (WATERCAP staff 1b). The project proposal also stated that participation and joint activities of various stakeholders would further ensure effective work flows and minimize the risk of duplication of efforts (WATERCAP 2010: 20). Special focus was set on the involvement of key leadership of the participating partners since this would further strengthen ownership and sustainability (WATERCAP 2010: 26):

“Furthermore, sustainability will be secured through ensuring participatory approaches and ownership of programs that will be developed in the process of implementation. For instance, deliberate efforts will be undertaken to involve the key leadership of the participating institutions, decision-makers at regional and national levels, and other agencies with a similar mission with a view to ensure institutional support and buy-in” (WATERCAP 2012: 26).

To ensure clear and sustainable monitoring, it was agreed that the implementing unit would write reports every six months that were forwarded to RUFORUM, which directly reported back to the Austrian donor agency (WATERCAP 2010: 19).

6.2.1.2 Observed and reported participation

Figure 10 displays the project system merged from the individual maps drawn by the WATERCAP staff and the project's first annual report. Members of the local community were not considered as separate actors, rather were they seen as equivalent to the IPs. Also, BOKU University was in direct contact with the donor agency, RUFORUM and the two African Universities. PELUM as another development actor was considered to support the project's conceptualisation and implementation in Uganda.

PELUM is a network of civil society organisations working on participatory land use management.

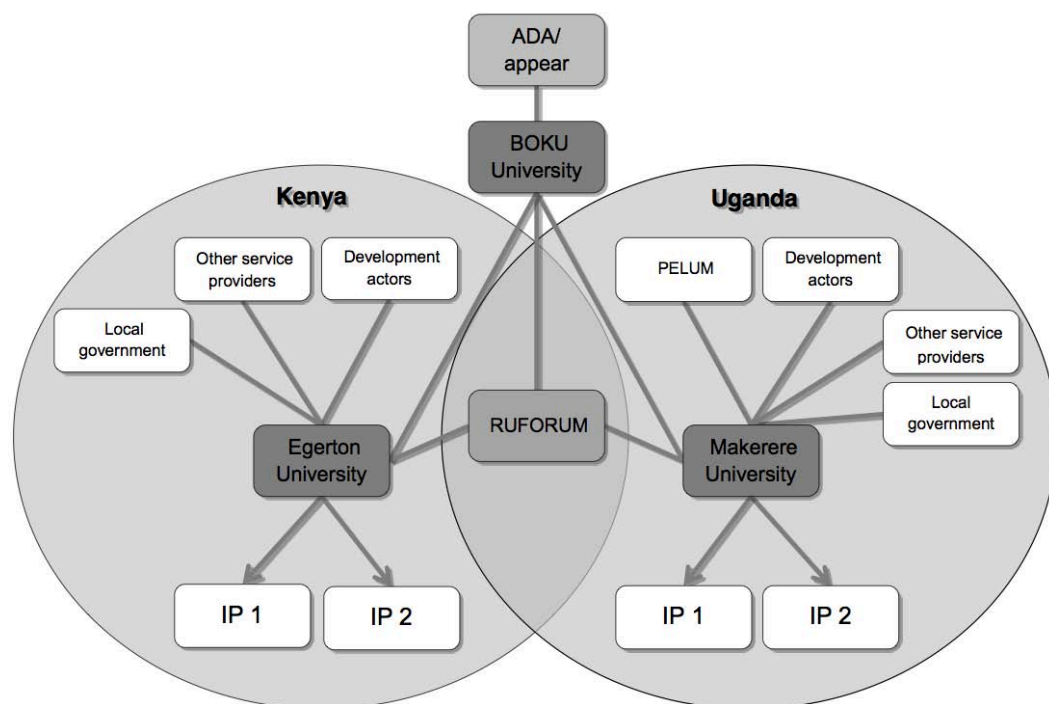


Figure 10. WATERCAP project system (compiled by author derived from WATERCAP project staff and WATERCAP 2012)

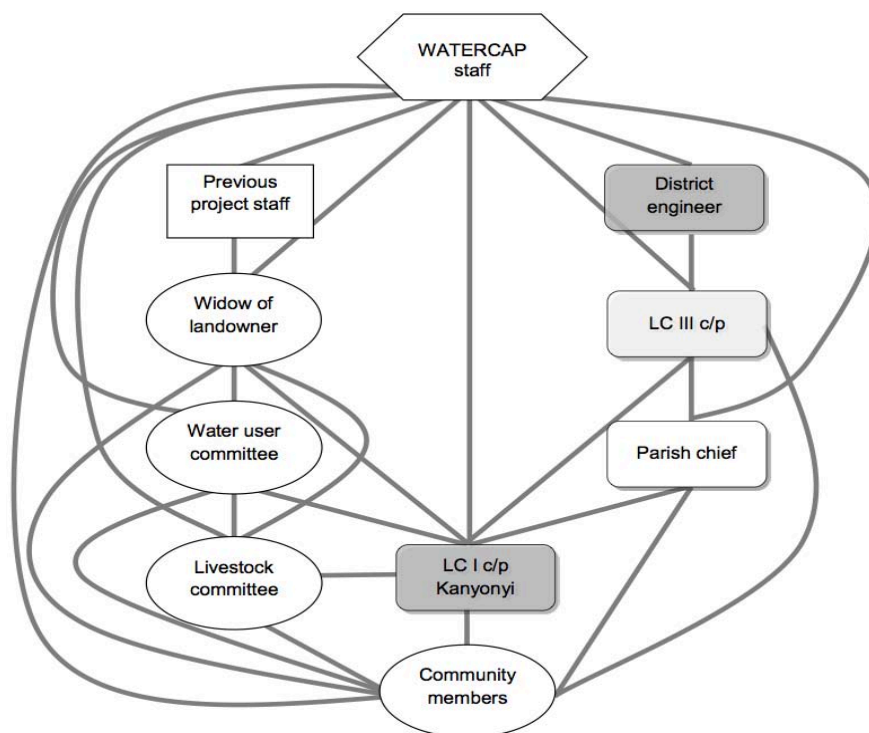


Figure 11. Stakeholders involved in the Nakasongola IP and their communication flows (compiled by author derived from interviews)

Figure 11 is an expansion of IP 1, giving an overview of the stakeholders involved in the Nakasongola IP and their communication flows (grey lines). Nakasongola was chosen as one project site because it was a mainly agro-pastoralist community in the cattle corridor and a previous Makerere project had worked with the community in the past (WATERCAP staff 3a). Stakeholder boxes shaded in grey represent stakeholders who were brought on board during the process while the others had been part of the project from the beginning.

Generally, interviews showed that the project as a whole was not widely known among local community members and government representatives. Most livestock farmers were not aware of the project itself, they only knew about the implementing unit from Makerere University. Some livestock owners were not aware of the existence of the project at all (Livestock owner 8).

6.2.1.2.1 Project members' internal interaction and their roles

The three involved universities together with the coordinating unit RUFORUM conceptualized the project (WATERCAP staff 6). Decisions on the specific implementation were left to the implementing units in Kenya and Uganda (WATERCAP staff 6). According to WATERCAP staff 6 an initial plan existed to hold a meeting on the conceptualisation of the IPs with all project partners. However, this meeting never took place, which WATERCAP staff 6 saw as the reason for the different designs of the four IPs.

The principal investigator had the responsibility of coordinating the whole project starting from: the identification of stakeholders, the consultation of stakeholders regarding decisions on the actual implementation, to the financial reporting and accountability (WATERCAP staff 5). It was further mentioned that the principal investigator was answerable for project related activities even if responsibilities were delegated to other team members (WATERCAP staff 5). However, another project employee claimed to be in charge of major project decisions:

You know, when this project was developed, I think I already told you, I think RUFORUM played a very big part in writing of the project but [WATERCAP staff 5] and I have worked very well together so he put me as part of the project, so I became a co-investigator but then [WATERCAP staff 5] also took on another job in Worldbank, so I in principal became the principal investigator and worked very hard on selecting the sites... (WATERCAP staff 3a).

Project internal conflicts

Among the members of the project staff two main areas of conflicts could be identified. These two areas are concerned with the role allocation of the different project team members and with the distribution of funds.

A member of the implementing unit repeatedly called for more presence of RUFORUM in the field to ensure monitoring and good collaboration between the partners (WATERCAP staff 3a). WATERCAP staff 3a took the view that RUFORUM should have been more involved in the implementation. WATERCAP staff 3 was aware of one joint visit to the community with WATERCAP staff 1 but other than that, the team from Makerere did not know about any additional trips by the coordinating unit:

I don't know, I don't know, if they have been there, because even in the meeting we held in Nairobi, we told them that you people must be visible in these IPs and be able to do on spot checks, even make sure that we are doing the work, because I can be talking here but when there is nothing, [...], so they should really as the project coordinator, I think in the implementation, to me, I really think they should do much better than that (WATERCAP staff 3a).

In contrast to this WATERCAP staff 1b stressed RUFORUM's role as the coordinating unit which was not supposed to work with farmers directly but rather clearly focus on ensuring the strategic objectives were met and facilitating the interactions between partners (WATERCAP staff 1b).

Also, it was reported that communication channels between the involved project members were not fully functioning in the planning and implementation phase. After the project's first year it became apparent that communication between the project partners was weak and only improved in preparation for major milestones (WATERCAP 2012: 19). Meeting the reporting requirements turned out to be challenging (WATERCAP 2012: 20). While RUFORUM declared that the implementing unit had not handed in progress reports on time (WATERCAP staff 2), the implementing unit saw a failure on side of RUFORUM who had not submitted due progress reports to the donor agency on time which jeopardized the project's activities (WATERCAP staff 3a). As a consequence, the first annual review report was surrendered to the donor agency with delay (WATERCAP staff 6).

Associated with the issue of defined roles was the question of budgeting. There was a clear disagreement between the implementing and the coordinating unit relating to the allocation of funds. The implementing unit in Uganda was particularly discontent with the proportioning of the budget. During the writing of the project proposal a budget was suggested. From the beginning the team from Makerere University opposed the budget

because a major part was reserved for RUFORUM. The team from Makerere University were under the impression that insufficient money was allocated for the actual implementation of the project (WATERCAP staff 5). WATERCAP staff 3 saw in this unbalanced distribution of funding a major constraint to the project:

... but I also think the project design had a problem in it, because there were no resources allocated to field visits, so if you don't allocate me money for field visits, how do you expect me to go to the IPs and yet the platforms their selves were, I think really were core to the project. For the project, in fact for you to be here, is because those platforms are there, for the learning to take place, but the amount of money that is allocated to them is very little (WATERCAP staff 3a).

According to WATERCAP staff 5, team members from Makerere University voiced their apprehension and made some recommendations about the budget before it was submitted to ADA. Those recommendations included increasing the budget line for transportation to enable field trips, and to cut the of human resources and equipment budget, for items such as computers for RUFORUM (WATERCAP staff 5). Despite this dispute, the recommendations by Makerere University were not incorporated in the final budget. Unlike the team members from Makerere University, RUFORUM staff held the opinion that the coordination of the entire project required a considerable proportion of the budget (WATERCAP staff 1b). Since RUFORUM was responsible for the project evaluation and for enhancing partnerships among actors by organising international review meetings sufficient funds needed to be available for such activities (WATERCAP staff 1b).

6.2.1.2.2 Participation of relevant stakeholders

No development actors such as locally operating NGOs or representatives of the private sector were involved in the Nakasongola IP. Initially the project had planned on working with PELUM but as no budget was allocated to the organisation it dropped out of the project during implementation (WATERCAP staff 3a).

The NGO World Vision has a local office in Nakasongola town and had started a project in 2010/2011 in the area to address water related issues and to improve water availability for both domestic and livestock use. During the course of the project World Vision excavated four new community valley tanks and de-silted two existing ones. A water user association, whose 30 members are elected by the local communities and trained by World Vision, are responsible for operation and maintenance. These members then manage those valley tanks (World Vision staff pers. comm.). The

WATERCAP team did not consult World Vision project staff about their ongoing activities in the area.

The project based the decision of the project site based a previous initiative implying the opportunity to build on previous achievements:

We thought that it was important to put these projects in areas that other projects existed already because I thought it would create a strong link and it also will build on what already exists (WATERCAP staff 3a).

The WATERCAP project built on the work of a previous project implemented by Makerere University (WATERCAP staff 5). This previous project worked with the community and put improved watering structures in place. Nevertheless, the previous project experienced some challenges since the caretaker of the land where the valley tank was located had initially opposed the project's activities (Key informant 4) and after the project had come to an end, community members stopped using the new facilities (WATERCAP staff 5). The WATERCAP team's basic idea was to work with the same community again, find out why the previous management practises could not be sustained and continue work from there (WATERCAP staff 5). After the Nakasongola IP had been chosen, WATERCAP staff got in contact with community members. Since the WATERCAP project built on this previous Makerere project, staff from the previous project joined the WATERCAP team on their first visit and introduced the WATERCAP staff to the local community:

So I called [key informant 2] and [key informant 2] mobilized the water users association, then I travelled with [WATERCAP staff 3] and introduced [WATERCAP staff 3] there and said please, this team, they are going to be on where we had stopped, let the fire keep burning, yeah, and unfortunately I have not been in touch with so I'm not so much coherent of which level they could have reached with them, but I'm the one who introduced them there (Previous project staff 2).

Apart from introducing the project staff to the local community the project staff of the previous project were not involved or consulted further:

... there was almost nothing to work together because their project had already ended, maybe we would have worked together if there were technical issues to do with livestock the livestock management but we only concerned about water and the management of the water resource... (WATERCAP staff 5).

Besides staff members of the previous project, the WATERCAP team consulted local government representatives. As the two local village leaders live in the community and use the valley tank, their roles are discussed in the next section. However, representatives from other local government levels were also involved. Local government representatives 4 and 5 indicated that they had been informed about and

involved in the project in a sufficient way. Project team members communicated with both local government representatives 4 and 5 via telephone calls or letters, informing them about the project's activities, its progress and joint meetings. Local government representative 2 was consulted at a later stage of the project; this belated consultation of local government representative is also indicated in figure 11 (page 45). Local government representative 2 stated that he only got to know about the new water trough after its construction. However, he was consulted before the de-silting of the valley tank; the project's engineer approached local government representative 2 to ask for support with the acquisition of an excavator and other equipment needed for the de-silting (Local government representative 2). In contrast to this, local government representatives 6 and 7 were not contacted directly by project staff. Until the interview took place they were not aware of the project partners and thought World Vision implemented the project:

Actually I was concerned with that because I personally as far as I can remember I didn't get any communication, actually I thought it was World Vision that de-silted it, you are just telling me that it's not, it's not World Vision because World Vision is the one that's been coming out de-silting and excavating dams so I had thought that it was World Vision that had done the work (Local government representative 6).

6.2.1.2.3 Participation of local community members

Since the staff members of the previous project introduced the WATERCAP project staff to the community, their principal contact person was also the liaison for the WATERCAP project team to the community. As part of the planning phase the WATERCAP team made approximately six trips to Wanzogi and Kanyonyi village prior to the actual implementation (WATERCAP staff 3a). Before being introduced to the whole community the WATERCAP team met with local key informants:

So we sat down with them and we told them what we wanted, that like, that was like an informal interaction to entry into the community, so we asked [key informant 2] to mobilize now a bigger group (WATERCAP staff 3b).

The aim of this first meeting was to consult local key informants about the challenges the community faces regarding the water resource. It became evident that water availability, functioning watering structures as well as management practises were the most pressing challenges.

In further consequence meetings were held with members of the implementing unit, local key informants, livestock owners and local government representatives. As a first step the challenges discussed during the first meeting were approved by the whole community (WATERCAP staff 3a). Approximately 30 livestock owners attended the

first joint meeting between WATERCAP staff and the community (WATERCAP staff 3a). No clear information on how many meetings were held in total between WATERCAP staff and the local community was available. Respondents were informed of between zero (Livestock owner 16) and up to ten meetings (Local government representative 5). Most respondents were either informed by key informant 2 or one of the other committee members (Livestock owner 8). According to key informant 1 approximately 60 households were informed about these meetings. Exclusively people owning cattle, who live close to the valley tank, were mobilised:

Those are the ones who are near the dam and access the dam. Those other people who are a bit distant from the dam they were finding it difficult to take the information there, so they did not mobilize them (Key informant 1).

Generally, the attendance at these meetings, apart from the first one, was between 15 to 20 people (Key informant 1). The informant explained this rather low turn-out rate, compared to the first joint meeting, as follows:

So the other people just don't like attending meetings, yeah so unless there is a problem maybe it is during the dry season and maybe you have told him or her that if you don't attend the meeting then your animals will not be allowed to drink from the dam, that's only when they would come and attend, but otherwise on a normal day they would not come and attend meetings, so they come not because they were not informed but because they just don't want to attend these meetings, they see it as a waste of time (Key informant 1).

Opposed to this, community members felt obliged to join the meetings whenever they could, as the valley tank was the only water source they could use after their own ponds had dried up (Livestock owner 5). This livestock owner as well as some community members who only attended a few meetings, explained their absence from other meetings by lack of time or their occupations in other areas:

He says there were very many meetings that were held but him as a person has only attended two, and that is because most meetings were held when he was not around, he has other duties he does outside of the village so most of the time they called for meetings, he was away, and yeah so he has attended only two meetings, yeah that's it... (Livestock owner 5).

A few interview partners who did not attend any meetings stated that family members went there for them and informed them about the outcome of the meetings (Livestock owner 11). Also, it occurred that interview partners were not informed about these meetings at all but would have liked to participate:

So she has never attended any meeting because nobody has ever invited her to them. But if she knew, she would be there, every time the meetings are held, she would be there, if she knew, but nobody has ever told her (Livestock owner 2).

Some livestock owners stated they had never heard about the construction of a new trough and the de-silting of the valley tank until it was already implemented. Even though they had not been informed, they expressed their satisfaction about the project's activities as they saw benefits from the new watering structure (Livestock owner 16).

Various versions regarding the actual decision-making processes on the necessary actions existed. Some interviewees stressed that decisions were made jointly between the WATERCAP project and the community during meetings:

Interviewer: And can he tell a little bit more how the decisions have been made in these meetings?

Translator: Ok so it was both the community and Makerere team (Livestock owner 7).

A member of the project team stated:

... so they [the community] prescribed the solution, they diagnosed the problem and prescribed the solution... (WATERCAP staff 5).

At community level some livestock owners were also under the impression that decisions were either made exclusively by the WATERCAP team (Livestock owner 12) or together with the water user committee. After decisions had been made the water user committee either just passed on the information (Key informant 7) or the community was consulted and asked whether they agreed to or disagreed with these decisions:

Now he is saying that they [WATERCAP team] were, they did not make decisions for them, ok like they made the decisions but then they call for a meeting and tell them this is what we plan to do, this is what we intend to do, then they agree together in a meeting (Livestock owner 9).

Additionally, key informant 2 stated to have had some kind of veto-right and that final decisions were up to her and the WATERCAP project staff:

So the final decision after all these meetings, the final decision was between [key informant 2] and also [WATERCAP staff 3], because the community would come up with something but maybe even want you to de-silt and enlarge the dam but if the land owner has not accepted it can't be done and also if the project team leader says there is no money for enlarging still it won't be done, so the actual final decision was between the land owner and the team leader of the project (Key informant 2).

Although at the beginning of the project's engagement the community was consulted about their challenges with respect to the water source, it was made clear that the project team decided on the design and technology for the new watering structure (WATERCAP staff 3 pers. comm.). WATERCAP staff 4 was responsible for the planning and design of the new watering structure and also made the decision that

additional equipment was needed, such as the pump (WATERCAP staff 4). Nevertheless, the community had a say in the actual execution. As it became apparent in the stakeholder workshop discussion, WATERCAP staff 4 together with livestock owners decided on the exact location of the new watering trough. An important factor here was to place the trough in some distance from the valley tank so that big herds could not accidentally access the valley tank itself (Stakeholder workshop). According to livestock owner 7 livestock owners suggested measurements for the new water trough; WATERCAP staff 4 trusted their decision and adjusted the watering trough according to their decisions. Also, WATERCAP staff 4 incorporated the livestock owners' request concerning the pipe delivery system. Initially he had planned on installing a built-in pipe system but because livestock owners were concerned that it might get stolen, they decided on portable pipes:

They said no, you leave it there, it gets stolen, you know the thieves here, so nobody will do so, they said no it will be stolen so I decided to give way, so that's why the pipe is portable (WATERCAP staff 4).

Apart from attending meetings, local community members participated in construction related works. They helped organising equipment, demolishing the old watering facility that had been constructed by the previous project and helped building the new water trough (Livestock owner 7). In preparing for the de-silting of the valley tank they also slashed the grass and cleared the bushes around it (Livestock owner 12). Furthermore, as one of the final activities they supported the project's activities by putting up a fence around the water source. Local government representative 1 and key informant 1 mobilised people and asked everybody in the village who was using the valley tank to contribute poles for the fence.

Generally, interview partners' impressions about attended meetings were rather positive. Livestock owners were particularly content about the meetings because all the things the community had asked for from the project and everything they had agreed on was actually put into practise:

Ok, he is saying that the interaction was quite good because after the meetings whatever they agreed upon, whether it was the community slashing around the dam or clearing the bushes around the dam they used to do it and then what the project from Makerere promised to do, they also did, so the interaction was quite good and to him he sees that was something that was very good, because it was bringing development in their community (Livestock owner 5).

However, in the course of the project implementation some problems and challenges arose. For instance, things that were agreed upon such as collecting money to purchase a local plant to support the barbed wired fence were not accomplished on

side of the community (Key informant 6 pers. comm.). Additional to this, on an unannounced trip WATERCAP staff 4 discovered that the community was not using the new watering structure and rehabilitated the traditional troughs instead. Due to the lack of enthusiasm from parts of the community, the WATERCAP team started reflecting the process and scrutinizing the participation process in particular. During a field trip WATERCAP staff 4 overheard children talking about the local village leadership not being involved in the project's activities. Initially the project team believed the local leadership to be actively supporting the project, while in fact the local leadership did not feel involved (WATERCAP staff 5). Consequently, WATERCAP staff 4 approached local government representative 1, explained the aims of the project to him and asked him to participate more actively. The project had started in mid 2011 and local government representative 1 was brought on board in October 2012 (Local government representative 1). Furthermore, the project team decided to take local government representative 1 to the participatory annual review meeting in Nairobi in April 2013, as this would expose him to the experiences other farmers had in different areas and sensitize him for the project's activities:

So, now, when we had our meeting in Nairobi, we said, let's take him so that he can hear the stories that the other people from Kenya telling, and also stories from Rakai, and also hear us telling the story that his area is not doing well (WATERCAP staff 3a).

Several community members noted a difference in the behaviour of local government representative 1 since his return from Nairobi. From then on he was mobilising people in the whole community to participate in the project by attending meetings and helping with work that needed to be done. He himself stated:

So he made it clear to them that actually the main aim of this project is to provide us with water for our livestock. So people got to know why the project had come and what its main objective was and now they are more than willing to move with the project (Local government representative 1).

Since the valley tank is situated on the border between two villages local government representative 3, who was not consulted by the project team, was also concerned with the valley tank. According to local government representative 3 he attended four meetings but nobody ever approached him to interact with him directly, so he did not introduce himself or participate more actively:

... he says that if maybe those people asked who the chairperson is, he would stand up, but since they have never asked, so he also just sits and looks on (Local government representative 3).

Further, he stressed his possible role in mobilizing community members. Since the valley tank was for the whole community, local government representative 3 saw the need to involve both local leaders to equally ensure the involvement of members from both villages.

Another important group who felt left out were the other widows of the presumed landowner and their children. WATERCAP staff 3a stated that the project approached the children and the second wife of the late landowner at the beginning of the project to discuss issues like providing access to the water source and actively involving them in the management of the valley tank. Unlike WATERCAP staff 3, key informant 4 stated to have not been actively included by project staff. Unfortunately it was not possible to talk to any of the children during the field stay. Key informant 4 was under the impression that she and the family's children had not been sufficiently consulted. Whenever the project team came to the village they parked their cars at key informant 2's house and only talked to her. Key informants 1 and 2 informed key informant 4 about the project (Key informant 4). Initially they completely opposed the project because they did not want to support any developments on the family land. But WATERCAP staff 4 approached them and convinced them to support the community by allowing the new water trough to be constructed:

Ok, she is saying that after the family members have refused to participate in the project, [WATERCAP staff 4] came and intervened in the family conflicts, then eventually the children agreed and actually participated in the construction of the trough (Key informant 4).

Another of the four widows of the presumed landowner declared to have never heard about the project at all before the interview. She explained this lack of information by her occupation in the neighbouring sub-county and associated absence. She generally approved the project's activities and expressed her willingness to participate if she had been informed (Key informant 8).

Conflicts connected to the participation of community members

One major area of conflict around the project implementation in Wanzogi and Kanyonyi links to the topic of benefit allocation within the community. As seen above, in the early phase the project team strongly relied on the interaction with key informant 2 and partly with key informant 1. A consequence related to the strong involvement of key informant 2 was that some community members and especially the local leadership felt insufficiently involved. They either expressed their disapproval of their lacking

involvement or of the – from their perspective – too tight interaction between selected community members and the project team:

The reason was because every time the WATERCAP team would come it would only meet a few people, certain people, like [key informant 2], maybe [key informant 1] and give them the information. So the problem came when those people who were getting information they are not disseminating that information to other members of the community, so that is where the problem was, because most members were not clear about the project why it had come to this community and what was their main objective, it was not clear, and that includes him as well (Local government representative 1).

As a consequence the project team reflected on the participation of community members and decided to involve the local leadership more. However, when local government representative 1 got more actively involved, according to WATERCAP staff 3, a conflict between local government representative 1 and key informant 2 arose as the latter felt like her responsibilities were cut:

But when [local government representative 1] went [to Nairobi], now [key informant 2] called me I think she is now seeing us as disarming her, taking away the responsibility (WATERCAP staff 3a).

Moreover, it displeased the local leader from the second village to see local government representative 1 being consulted while the WATERCAP team did not communicate directly with him (Local government representative 3).

Also, besides causing some strife between key informant 2 and local government representative 1, at community level the strong interaction of the project team with only certain people intensified the impression that some individuals were the sole beneficiaries of the project (Livestock owner 2). Some community members could not see any benefits for the community as a whole and therefore refused to participate (Local government representative 4).

6.2.2 Social structures and dynamics

This section looks at the research sub-questions: *How were social structures and dynamics at community and project team level considered in the project concept? As well as How did social structures and dynamics influence the project? And, in which way did the project intervention affect them at community level, respectively?*

6.2.2.1 Social structures and dynamics considered in the project proposal

The project proposal neither contained information on social structures and dynamics that might influence the project nor on possible impacts the project could have on such structures. The proposal stressed the project's objective to identify internal and external factors influencing the development of partnerships between project actors by citing the following intended action:

"Assessment of internal and external constraints and opportunities for effective partnerships between universities, development agencies and community for mitigation of climate change induced water vulnerability and uncertainties in rural areas" (WATERCAP 2010: 10).

These possible constraints and opportunities were not further defined and specified at the conceptual project level.

On the conceptual level no attention was drawn on social dynamics and relationships between actors on community level.

6.2.2.2 Observed social structures and dynamics

6.2.2.2.1 Land tenure system and its implication for the project

Description of the land tenure situation

As mentioned above the valley tank has been in existence since the late 1960s and is situated on the border between the two villages Kanyonyi and Wanzogi. Throughout it was used as a communal valley tank, the land tenure is not unambiguously clear regardless. It became apparent that the majority of community members considered the valley tank itself as a communal water resource, belonging to the livestock owners, giving all community members the right to use it and the responsibility to maintain it:

So the, she says the dam is for the whole community, even the trough is for the whole community (Livestock owner 6).

Only in the opinion of one respondent, did the valley tank not belong to the community as a whole, but to one single family:

According to him the dam belongs to the [family of key informant 2] (Key informant 6).

Despite this near unanimity relating to the ownership of the valley tank itself, the picture regarding the plot of land where the valley tank was situated was a different one. Within the community it was widely disputed who the rightful owner of the plot was. There were two main opposing views with regard to the land tenure. Several community members and government representatives saw the plot as either community or government land, implying that community members had been granted access to the water source since its construction (Livestock owner 16; local government representative 6).

The majority of respondents regarded the plot as privately owned. Nevertheless it was controversial who the legal owner was. While several interview partners held the opinion that the rightful owner was unknown (Livestock owner 4), there was a family claiming to be the landowner. This family declared to be the legitimate landowner holding the land title. According to this family and some community members, their father in law owned this piece of land and had allowed the community to construct the valley tank on his land and to access it for free (Key informant 7). After the original owner had passed away his son became responsible for the land. When he also deceased a couple of years ago, his four widows and children were granted the land title:

... so they have the will instructing their father in law to go and get the land title from the office, they also have the agreement, ok, the land agreement which shows that they are the owners of the land, they also have the title, so they have three documents that proof that they are the owners of the land (Key informant 4).

Some community members shared the opinion that the plot belonged to this family:

So the dam belongs to the community but the land where the dam is belongs to [key informant 2 and family], that's how she heard (Livestock owner 11).

Yet, several community members doubted their ownership, as the family had never proven to hold the land title (Livestock owner 7). However, local government representative 1 acknowledged the family to be caretakers of the land while the actual landowner remained unknown. Supposedly, there was an agreement between the caretaker and the community by the time the valley tank was constructed. This agreement ensured the community access to the land with the option of buying it from the actual owners once they were known, something that never took place (Key

informant 1). In that context it was repeatedly stressed that the land needed to be surveyed in order to clarify the condition of ownership in the long term (Livestock owner 7).

The interviewed government officials could neither untangle the complex issue nor clarify how the issue could be solved other than surveying the land. According to local government representative 6 there was a new policy to avoid cases where caretakers or owners of plots of land start refusing access to users. If a communal resource was developed on private land the landowner automatically would resign from his land right and would sign over the land title to the government. In case of an already existing communal resource the situation would be more complex. Local government representative 6 was under the impression that the plot already belonged to the government. However, to ensure community access he stressed the importance of negotiations to find an agreement between the community and the caretakers or landowners, which could be supported by the sub-county but which had not happened for the valley tank in Kanyonyi/Wanzogi. Local government representative 5 explained that the valley tank was situated on mailo land, suggesting that it would be on private land but that the landowner guaranteed the community to allow them access to the land. Nevertheless, it would be preferable for the community to actually acquire the land title as this was more legally binding. Local government representative 5 was also not completely sure who the actual landowner was, and, mentioned the need for surveyors.

Conflicts related to the land tenure

Regarding the unclear land tenure situation some conflicts arose. According to key informant 4, community members were jealous of the family for holding the land title:

... so when her husband took over control over the land, the community members were, ok, they became jealous and they were saying how come, this man own such a big piece of land and so like there was some conflict... (Key informant 4).

Key informants 2 and 4 accused key informant 1 and local government representative 1 of trying to take away the land from the family by suggesting that other people held legal ownership of the land and bringing them to the village. This dispute was settled at the sub-county level, but key informant 4 heard rumours that local government representative 1 and key informant 1 were trying again to get hold of the land tenure (Key informant 4).

In addition to the disagreement over the land tenure, there was a dispute between the family and the community as the family considered limiting the access to the valley tank and charging community members for accessing it, which was opposed by some community members. The three interviewed widows unanimously agreed to hold the land title (Key informant 2, 4 and 8). Yet, they were disunited concerning how the land should be managed and to whom it should be accessible. Key informant 8 was of the opinion that the land belonged to the whole family, but having a communal water source there, the access should remain free for the community. The other two interviewed widows did not share this opinion. According to them, as owners they should be able to profit from their land (Key informant 4). Key informant 2 would prefer selling the plot to the community. If no agreement between her and the community could be found she would start charging livestock owners to access the water source:

So, she is saying, after they have surveyed the land and it has been actually found out that the swamp belongs to her, ok, then they will have to sit and they agree on the cost, so the community can buy that place. In case they fail to agree, then she will also start charging them for using, because, she says they sat in meetings and they agreed, they accepted, in case we fail to buy then they can charge us (Key informant 2).

But as seen above some community members doubted that the family was actually the landowner and more importantly considered the water source as communal, therefore they opposed this option. In contrast to this, some other community members would agree to pay for accessing the land on the condition that the money did not exclusively benefit the landowners but rather was also used for maintenance works (Livestock owner 2).

Besides the disagreement about the access to the water source, there was a dispute within the family. According to key informant 4, key informant 2 was hiding the land title away from the rest of the family, claiming to be the sole owner:

... but [key informant 2] has kept the land title away from her co-wives, she doesn't want to show them so there is still some misunderstanding and [key informant 2] goes around telling people that she is the owner of the land, she herself is the owner of the land, not that the land belonged to her husband, so there is that form of misunderstanding among the wives (Key informant 4).

Key informant 2 mentioned to have the land title documents, explaining this by her status as first wife. However, key informant 4 felt like the whole family owned the land and that key informant 2 did not have the right to make decisions on her own excluding the rest of the family and hiding the land title from them. This dispute was intensified by the strong interaction of key informant 2 with the project team. Key informant 4 stated

that she and the rest of the family were not involved in decisions regarding the valley tank:

However, because [key informant 2] had accepted and actually signed then the project went ahead (Key informant 4).

Direct implications for the project

The situation around the land tenure was relevant to the project's processes in various ways as well as the project had impacts on these dynamics reversely. The implementing unit learnt about the complex land tenure situation in the early stages of their interaction with the community. WATERCAP staff 3a stated that the project team held meetings with the community and the children of the four widows who claimed to hold the land title. According to WATERCAP staff 3a the children opposed the project due to different reasons. Since the project team strongly interacted with key informant 2 (cf. above) the rest of the family felt left out and that key informant 2 would be the only beneficiary of the family's land:

... but when the children from this family saw us going to that lady's house, this is now their stepmother, so they thought that maybe a new project had come in, a lot of money was going to come in and this one was going to be the only beneficiary. So they came and brought a lot of resistance, so they told us that this cannot work (WATERCAP staff 3a).

According to key informant 4 the lack of consultation was also a reason why they were still opposing the project and never agreed to the de-silting of the valley tank:

The first meetings, when they were planning on how to build another water trough, they participated and they used to come for the meetings but when it came to the de-silting and expansion of the dam, they have never participated, because nobody has ever come directly to tell them to go and participate. So they have never participated, it has always been [key informant 2] (Key informant 4).

In the course of the interview key informant 4 expressed the wish for a joint meeting between the whole family and the project staff to discuss the issue of land tenure as well as how the access should be arranged for the community.

The project team mentioned that they had held meetings with the community and the children trying to convince them that the valley tank was a community resource and that they should not deny access to it:

But we didn't want to begin something that wouldn't be maintained because this resource had been given to the community by the father, ok, and everybody knows that this is a community resource and you cannot stop, in our culture here, you cannot stop somebody from going to a water resource, yes, in fact the village was very very annoyed with the children hoping that they were going to really take away the resource and try to control the resource when their father didn't control it. (WATERCAP staff 3a).

Also the project team suggested making the children members of the two committees concerned with the management of the valley tank in order to improve their involvement (WATERCAP staff 3a). However, as seen in chapter 6.2.1.2.3 on participation it became apparent that parts of the family felt insufficiently involved. According to them, the project team did not solve the issue with the community; rather they left it to the community and family to find a solution:

To me, the implementation, I don't really see a big problem with the process of implementation because we followed steps, we involved people and they also showed their way up, part of us, except for the small resistance at the beginning, and we gave people time to sort themselves out because this was history and not part of this project, so we gave them time (WATERCAP staff 3a).

Local government representative 7 expressed a feeling of surprise that in the case of the valley tank in Kanyonyi and Wanzogi solving this issue was left to the community:

Maybe, just to add on to what you have said that if when the project is going to put up like in a place which place belongs to us like a land and the land belongs to a certain person or it's a private land majorly what they do is just to negotiate with that person then they come out with a resolution then afterwards they implement (Local government representative 7).

Community members also expressed their concern about the insecure situation regarding the access to the water source in the long run. As long as the land was neither surveyed nor a binding agreement between the landowners and the community obtained, the ownership of the valley tank and thus of the newly implemented watering facilities would remain unsteady:

... so he says that at this moment they are now not sure who owns that dam because if the landowner came and fenced off [the] land, then the community will have no way of accessing the water (Livestock owner 12).

Also, local government representative 2 voiced misgivings about the insecure situation on behalf of the local community.

6.2.2.2.2 Power structures

Power structures at government level

All interviewed local government representatives stated that they were crucial for the successful implementation of projects conducted in the area. The interviewed local government representatives pointed out various reasons why they were important and influential for the project implementation. Local government representatives 6 and 7, who had not been consulted by the project team, emphasised their key role at the local level and pointed out that projects would not succeed without their involvement as they

were working closely with communities and had the ability to advise the project regarding information about the local (water) situation (Local government representative 7).

Local government representative 4 stressed his role as mediator between stakeholders, encouraging the community to work with the project and the suspected landowners:

... so I was impressed to what was introduced to the citizens I said also I would not neglect it but we shall work hand in hand with the, those people for the university and even the locals (Local government representative 4).

Moreover, he explained that during the early project phase some community members had refused to participate because they had not been aware of the benefits of the project. Local government representative 4 was then able to explain the benefits and according to him, if necessary, could even take disciplinary measures. He did not specify the exact reasons for, or forms of, such disciplinary measures.

Local government representative 5 saw his role mainly in sensitizing the community for water management related issues and supporting them in maintaining the water structures:

My role, my role is sensitize the community look after every item, or every water source, put stability to look after it very carefully, to collect resources like finance to sustain those water points from collapsing (Local government representative 5).

Power structures at community level

Within the community, interview partners identified three main influential parties, namely the two village leaders, members of the family claiming to hold the land title and members of the two management committees. According to key informant 5, the latter had a key role in the mobilisation of community members for any activities related to the project. Several community members approved this opinion and said that they were informed about meetings by members of the two committees (Livestock owner 13).

Especially in the early project phase key informants 1 and 2 were crucial for informing community members about the project. According to several community members they told people that they were the ones who had brought the project to the community:

Those were the people who moved within the community telling people about the project that we have brought and they are going to build for us a trough and going to enlarge for us the dam (Livestock owner 2).

Also, the WATERCAP staff became aware about the circumstance, that the two key informants were misinforming community members about the reason for the project's engagement in the community:

... but now what [key informant 2] was saying was that she is actually who is bringing Makerere, so she was using that opportunity for her own political local popularity or whatever... (WATERCAP staff 2).

The WATERCAP staff considered key informant 2 as very influential within the community, calling her *"the lady who was in charge of the water resource"* (WATERCAP staff 3a):

But she was very very instrumental, she is a mobiliser, and because she was part of the land, part of the owners of the land, that's why we thought she was a very important person, and she mobilised communities for us... (WATERCAP staff 3a).

But also among community members – despite this disapproval of her attitude concerning the project – key informant 2 was respected and considered as an important player. Key informant 6 even regarded key informant 2 as the most important player within the community:

... ok, he is saying that the only person who can interact freely with the community is [key informant 2]... (Key informant 6).

In addition to the committee members and one family member of the suspected landowners, local leaders at the village level were considered to have the potential to be influential within the community. WATERCAP staff 4 thought that the opinions of local leaders were more powerful within a community than the ones of the project team:

... ok but as you have seen the leaders play bigger part, either the cultural leaders or the political leaders, yeah much as we find that the political leaders don't benefit from the water but there is, when they say something their words are taken more seriously than the words of us, the researcher... (WATERCAP staffs 4).

Another member of the project staff shared this opinion (WATERCAP staff 5). Since the active involvement of a village leader, mobilisation of community members for meetings as well as for activities concerning the construction of facilities or their maintenance improved (WATERCAP staff 5). Local government representative 1 defined his main responsibilities as mobilising people as well as introducing visitors to the community.

Local government representative 3 also considered his role as crucial for the project as he had the potential to mobilise community members. Despite his lacking active involvement by the project staff, local government representative 3 was informed by

local government representative 1 about activities and decisions of the project (Local government representative 3).

Conflicts around power structures

The local leadership itself turned out to be a contentious point. Some interview partners observed that the reason for the lack of support at the beginning of the project was insufficient consultation as well as unsatisfactory involvement in the management of the valley tank in general (Key informant 1).

Also, while to some community members local government representative 1 was key for the success of any activity, others voiced their discontent. Some community members did not feel comfortable with the leadership style of local government representative 1. Key informant 6 was under the impression that local government representative 1 was not ruling in a democratic way:

He says the other community members don't like the dictatorship of [local government representative 1] because he just sits in his office and decides soandso, soandso supports me therefore he, I should put him on the list as one of that persons who is supporting the project, so he say the other community members don't like it, if there was a way maybe Makerere could talk to him and see that he stops deciding on behalf of the people and instead call for meetings and discuss and agree with the community members on what needs to be done then that would be ok (Key informant 6).

This view was openly shared by one other interviewee, who explained that since local government representative 1 came back from the annual stakeholder meeting in Nairobi the community was no longer involved in the decision-making:

... so when he came back [from Nairobi] these people didn't know how he selected people so, [local government 1] selects people the way he wishes, these people do not know what criteria he uses to select... (Livestock owner 6).

Nevertheless, key informant 6 appreciates the involvement of local government representative 1 in the project:

Ok, he wants Makerere to still go through [local government representative 1] but all he is asking is that [local government representative 1] should stop being a dictator deciding on behalf of the community, he wants if there is something [local government representative 1] wants to be done he calls for a meeting and then they agree, together as a community, not just him deciding for them (Key informant 6).

Key informant 6 was further under the impression that local government representative 1 favoured livestock owners who only kept a few head of cattle, as local government representative 1 himself did not own cattle. Opposed to this, one livestock owner was under the impression that only people who owned many head of cattle were consulted. This was considered unfair as the valley tank was seen as a community resource and therefore, everybody owning cattle would have a stake in it (Livestock owner 2). This

conflict between owners of big herds versus livestock keepers with only a few animals was reflected in the formation of the two committees concerned with the management of the valley tank. The livestock committee was formed since some livestock owners with big herds were under the impression that the water user committee did not sufficiently represent their interests (Key informant 7). Even though the respective responsibilities of the two committees were clear and their working relationship was described as constructive, there were some rivalries among them:

... he was saying that they are working together but now the chairperson water committee is the one who is like weakening because he sees power is like being taken away from him, ever since this other committee was set up (Key informant 6).

As the valley tank is located on the border of two villages there were some disputes about who was actually in charge of and responsible for the valley tank. It was repeatedly stressed that more livestock owners from Wanzogi village than Kanyonyi village use the dam (Key informant 6). The fact that more people from Kanyonyi were in charge of its management caused some discord among community members from Wanzogi village (Livestock owner 6). According to livestock owner 6, this caused some uncertainty among people from Wanzogi if the valley tank was still considered for the whole community or if the users from Wanzogi would be denied the right to use it. However, it was possible to resolve this misunderstanding during the stakeholder workshop, where it was eventually agreed by all participants that the valley tank equally served people from Wanzogi and Kanyonyi.

6.2.3 Looking at it from a little distance – Stakeholder's reflections on the project's processes

6.2.3.1 Reflections on the project design and its implementation

As the projects intentions differed from the actual project processes, the WATERCAP team started to reflect upon the implementation. The project team was under the impression that the project experienced some major problems connected to mobilisation and technology uptake:

And I think we have been very open to tell people that the project didn't work like we have expected, because we have seen people, in fact they are laughing at us, how can you say the project didn't work, but it didn't and it doesn't mean that every project that is given money works, yeah (WATERCAP staff 3a).

As a consequence of these perceived challenges the first reaction of WATERCAP staff 3 was to pull out of the project, and start working with another community (WATERCAP staff 3a). By that time the new water trough was already constructed but the de-silting of the valley tank was still pending. Additionally, it was already agreed that a team of Austrian students, of which the author of this thesis was a member, would come to Uganda to conduct research on the two IPs in Rakai and Nakasongola. As a consequence of this WATERCAP staff 3 stated that the project went on, as they wanted the student research team to work in a good environment:

And then, because we wanted you people to come and work in a good environment, that's why we went ahead and de-silted, because for me, my, I was more intended to invest my money, to invest the money in Rakai. And probably in Rakai, why it's really working, because these are individual homes, we are not dealing with a big community, we are dealing with individual households... (WATERCAP staff 3a).²

The project consortium agreed to continue working with the community in Nakasongola and as a result of the encountered difficulties during the implementation of the project, the project team started reflecting the processes. Several project members, though in different ways, saw a problem with the project design. WATERCAP staff 3 was concerned that one of the project's major challenges was to manage people's expectations as monetary benefits were usually expected from development projects (WATERCAP staff 3b). A major dichotomy was encountered during the project implementation, namely the question of communal versus individual project focus:

... in some cases yes, you will see a lot of things happening as a result of the intervention but that's mainly on aspects that have to do with individual initiatives. Now

² The work of Faltmann (2014) investigates the WATERCAP project in Rakai examining the question of social dynamics around benefits for individual households in farmer groups.

here we are dealing with a bigger place, it's a community thing it's not about an individual there, because if it was like an individual thing you will see some individuals who are very keen and they know they can benefit from it, they would pick it up and run with it. But now this one it has to be a community thing and that's where the complexity even increases that where you want them to move as a community is much more complicated than an intervention which individuals can actually take up themselves, they would easily find individuals who are interested and committed and if they can do it on their own, they do it. But this is a community thing and it requires a lot of investment and you can only move as a community yeah, that's where even you get this complexity (WATERCAP staff 5).

Initially the project team decided to work with a community assuming that this would have the potential to multiply the projects impacts (WATERCAP staff 3a). Nevertheless, in the course of the project implementation the WATERCAP team started to consider this approach as problematic. Having a community-based management structure in place could hinder good operation and maintenance practices:

I think what I have seen here is that things that are managed by very many people don't tend to move (WATERCAP staff 3a).

An example of individual ownership was livestock owner 19, who excavated his private valley tank and mentioned that he felt more powerful as he was the only person in charge of the tank rather than having to rely on somebody else (Livestock owner 19).

With respect to the communal valley tank WATERCAP staff were under the impression that individual interests were dominating the process:

... now the other challenge that came was that although it is community approach it sounded more like individual farmers (WATERCAP staff 2).

To overcome this difficulty WATERCAP staff suggested different solutions. On the one hand it was proposed to hand over the responsibility to an individual who would have the power to make decisions and would have a personal interest in functioning structures (WATERCAP staff 3a). WATERCAP staff 5 on the other hand opposed this approach as this could lead to a commercialisation of the water source. Therefore, he recommended sustaining the communal character of the water resource, with a powerful committee responsible for maintaining it, which would be legally held accountable for any mismanagement (WATERCAP staff 5).

6.2.3.2 Reflection on participation of relevant stakeholders

As seen above the involvement of the various stakeholders turned out to be one of the project's major challenges. According to WATERCAP staff 2 the project team should have worked with several distinct groups in the course of the project:

Because it is not just the local council, there are also other social groups that should also be made aware or incorporated or used as one way to get to the community. The water user association, they were brought on board later, after the individuals, there are also other agricultural actors, there are youth groups, there are women groups that also need to be addressed (WATERCAP staff 2).

He further emphasised that the project team should have engaged more with locally acting NGOs:

During the assessment and characterisation of this group there should have been a delivered effort to ensure that we learn from these NGOs who are more presented there than Makerere... (WATERCAP staff 2).

WATERCAP staff 1a also thought that this lacking involvement of other development actors was part of the problems faced during project's implementation:

... so I would say yes because the development actors would be able to discover what the attitudes are before, they would have discovered it earlier on. And no, because probably they [the community] could decide to hide that from everyone, because the perception they had and this one I got from one of the local leaders when we had the review meeting in Nairobi last month, the perception that they had was that the university was coming to make benefits out of them, which is like using them for their own gain and they were not seeing any benefit so this is why they decided to act that way (WATERCAP staff 1a).

In addition, WATERCAP staff 5 reflected on the involvement of the previous project's staff, who had merely introduced the WATERCAP team to the local community. WATERCAP staff 5 conceded that the previous project staff should perhaps have been consulted more. From the perspective of previous project staff member 1 it might have been beneficial for the WATERCAP team to seek advice from the previous project staff in order to get further information about local dynamics and previously detected challenges as well as possible solutions:

Yeah, I think it would have been a good idea, reason being there are some innovations that we, some projects, ok some problems, some problems that we discovered which could need the solution, so we identified how to solve such problems but we didn't implement, test it for a long time to see their effects (Previous project staff 1).

Regarding the involvement of the local government WATERCAP staff 3 stressed the project's intention to work more closely with the sub-county in the future. Their role then would be to assist the community with the financial management of the water resource so that the budget for maintenance work would be secured (WATERCAP staff

3a). This was in line with the outcome of the stakeholder map drawn with representatives of the community. In drawing the map it was noted that the project should have gone through higher local government levels in order to facilitate better mobilisation.

6.2.3.3 Reflection on processes at community level

According to the project team the process of implementation itself did not cause any problems:

To me, I look at the process of implementation, I really think we went through all the right processes, because this is not the first project we have done with communities and we are from the social background so we know all these things about participation and it works out, there is evidence that there was participation, but even with participation, in fact, it's like what [WATERCAP 5] was saying, is participation enough, is participation enough to really enhance development (WATERCAP staff 3a).

Initially, the participation of the local community in meetings and construction related works was taken as clear evidence of the support the project has in the community:

... we said ok, if that's the problem with the design then we actually demolished that one [old water trough] and constructed this other one based on their recommendation, their own recommendations and they were there they participated in the construction of the trough, but then we realized that it was more than just the design of the trough, there were a lot of social cultural issues around that (WATERCAP staff 5).

Due to the conflicts that arose related to internal power structures and the participation of different actors, the WATERCAP team figured that only parts of the community were actively supporting the project:

When we are going there they prepare people who receive you and you think you are working with the whole community, yet you are working with just a section. When that other silent section wakes up then there raise conflicts and they refuse. So, what happened at some point was that the community was supposed to do some things, when Makerere went back they found nothing has been done. When you find out exactly why this is not happening it's because of the entry point. So they even wanted to pull out but we insisted that this is a learning point, actually we are going to find out what exactly shouldn't we do (WATERCAP staff 2).

Additionally, the project team reckoned that there might have been some issues with the project team's performance at community level:

Yeah because we talked to [local government representative 1], he was supportive, he said it's ok, everything is fine but then he was not really at the forefront of mobilizing people so we used more of [key informant 2], where we didn't understand a lot about the internal dynamics of the community so we talked to the LC there we consulted him, he seems to be supportive and he doesn't raise any issues he would come to the meetings but then what we didn't realize that maybe we did not give him the prominence in the leadership now that he needed (WATERCAP staff 5).

This also implied that in retrospect the project team thought that they might have relied too heavily on key informant 2 who turned out to be rather contentious within the community and who was not as good at mobilising the community as initially anticipated (WATERCAP staff 5).

Therefore, in retrospect the project team would have interacted in a different way with the community. They still would have first met with key informant 2 and revived an introduction to the community through this actor, but then would have preferred to find their way through the community themselves, being less dependent on single individuals (WATERCAP staff 3a). This also ties in with the lacking involvement of the local village leaders. It became apparent during the research for this thesis that the project team did not equally involve both local leaders, a circumstance that was communicated to the project team. As a result, project staff agreed with both local leaders to inform both about any further trip or activity:

... and you know, we always go through [local government representative 1] to mobilize people, we don't seem to be giving a great attention to the other one [local government representative 3], which we, when we were there we agreed that ok, now from now on if there is anything we shall be informing both of you (WATERCAP staff 5).

6.3 Effects

This chapter particularly looks at the research sub-question *How do the conceptualized changes in knowledge, capabilities and skills as well as behaviour in the community and within the project team distinguish from observed and reported changes?*

6.3.1 New knowledge, skills and capabilities

6.3.1.1 New knowledge, skills and capabilities conceptualized by the project

Conceptually the project emphasised improved training approaches as one of its major goals. The project idea emerged as universities were repeatedly seen as too divorced from the 'real world', not engaging enough in *"processes of learning and adaptation to confront complex challenges in a changing environment"* (WATERCAP 2010: 12). The objective of mutual learning of all involved stakeholders was connected with ensuring sustainable and efficient water use:

"Key output anticipated include improving relevance of curricula and research, incubating innovations, initiating mutual learning, knowledge and technology exchange between farmers, universities and other actors in the agricultural value chain. This requires institutional adjustments and change in mindsets and practices among the universities and their partners – hence a mutual learning process change" (WATERCAP 2010: 10).

The project proposal further stated:

"By specifically focusing on water vulnerability, this proposed partnership project seeks to influence better utilisation of water by the smallholder farmers to mitigate climate induced water stresses to enhance crop, livestock and fish production. It is an attempt to mend broken links between research and training and actual development progress and the recover the lost ground" (WATERCAP 2010: 12).

The shift to sustainable and appropriate water use technologies was considered key for improving smallholder farmers' livelihoods. In order to achieve this goal, indigenous as well as scientific knowledge would need to be integrated and policy interventions facilitated (WATERCAP 2010: 12).

The idea behind the project was to create and improve feedback loops to guarantee learning at all levels. In the project proposal the anticipated achievements were rounded up in the following way:

„The goal of the IP will be to use the lessons learnt to strategize a means to achieving a more versatile and realistic delivery of professional content by Universities; curriculum and research relevance to water stress related issues; means of incubating of innovations from all stakeholders, effective feedback mechanisms, sustainable means of technology transfer, and how to achieve sustainable agricultural development while

harmoniously addressing cross-cutting issues such as food security“ (WATERCAP 2010: 13).

Formally, the universities were in charge of integrating the lessons learnt into their curricula. RUFORUM by contrast had the responsibility to check if those best practise examples were actually in line with the project's objectives, document them and scale them up by making them available to other RUFORUM members (WATERCAP staff 1b).

6.3.1.2 Reported and observed new knowledge, skills and capabilities

6.3.1.2.1 Improved training approaches

Since the project was still ongoing at the time of the research not much information about lessons learnt and their incorporation into universities' curricula could be derived. While the project team was already aware of some lessons learnt, they had not arrived at a decision on the concrete formal integration of those lessons into the curricula (WATERCAP staff 1b). A member of the implementing unit confirmed that no actual lessons had been incorporated into the university's curriculum by summer 2013 (WATERCAP staff 3b). At Makerere University plans existed for a new PhD program, further working with both IPs and offering practical skills to students (WATERCAP staff 1b). One major focus would be to improve engineering courses and to bring them closer to the field. Therefore, experiences gained in the field would be shared to increase students' understanding of challenges encountered at community level (WATERCAP staff 3b). Additionally, more attention would be placed on the development of students' communication skills:

... so some of that information is going to be incorporated then we also want to incorporate some, there is a course for agricultural engineers to incorporate some things on communication because surely for them they are more interested in the technical part and it's not the technical part that matters so those are some of the things that we are thinking about (WATERCAP staff 3b).

6.3.1.2.2 Sustainable water management

The sustainable use of the water source in Wanzogi and Kanyonyi village turned out to be challenging. After the previous Makerere University project had ended, for two to three years there was sufficient water to sustain livestock from the area for the whole period of the dry spell (WATERCAP staff 5). The staff of the previous project excavated a second smaller valley tank next to the old one, which increased water availability considerably. This had the advantage of eliminating the need to move to lake Kyoga or

to find other alternative water sources. However, due to poor management practices and community members' refusal to use it, the new watering facility deteriorated and the valley tank further silted up, which had negative effects on the water availability.

The WATERCAP project team decided on de-silting the valley tank that was constructed in the late 1960s (WATERCAP staff 4). Since the valley tank was silted up, local government representative 6 appreciated the project's activity:

Ok, like Wanzogi dam de-silting was fine, it was even long overdue, we had thought of it and we had thought yes, it needed de-silting, of course there are many other dams that might require de-silting, de-silting the dam per se is ok, to me, it was ok, it was fine, it was timely I liked it although I was not contacted before the activity was to be done yeah, because Wanzogi, actually Wanzogi is the parish, one of the parishes with the largest number of animals... (Local government representative 6).

De-silting the valley tank was an important step towards a more sustainable and efficient water use, since it increased the water availability significantly. Local government representative 4 saw, in de-silting the valley tank, a major improvement for the local community, as this would ensure them sufficient water during the dry season. Yet, at the time of the research, the valley-tank had been de-silted recently and livestock owners had not yet experienced a dry season. However, livestock owners were hoping that the water would be enough to take them through the dry spell again and they would not have to migrate in the search for water (Livestock owner 5). Community members stressed that they had to wait for the upcoming dry season to actually judge if and how the situation had improved (Livestock owner 9)³. In addition to the anticipated increased water availability livestock owners mentioned meliorated water quality due to the project's activities:

He says right now animals drink clean water yeah but previously they were just getting any tin or jerry can, fetch water from the pond and pour in the local trough so the water was not as clean or as clear as it is in this new trough (Livestock owner 12).

Additionally, before the valley tank was de-silted and its slopes banked up, animals would step into the water and contaminate it (Livestock owner 6). Water protection was further improved by putting up a fence. In addition to a barbwire fence the local plant lukoni was planted which was expected to support the fence in the long run (WATERCAP staff 3, pers. comm.).

Livestock owner 7 also saw an improvement for their livelihoods since children did not have to miss school and help watering animals:

³ For further information on the amount of available water in the valley tank and respective management practices refer to the work of Scherer (2014).

And then in those past years before the trough was constructed, sometimes they used to tell their children to not to go to school because they needed labour to fetch water from the dam to the local troughs, but now, ever since the acquisition of the pump and engine ah, life has become much easier so now even children attend school throughout the year, because less labour is needed in watering animals (Livestock owner 7).

The new watering facilities also caused some problems. Some community members reported water wastage. According to them, after all herds had finished watering, there remained water in the trough, which the animals could not reach and which was wasted at the end of every day:

... because the way it is currently, when they pump water and fill it animals only consume part of it, they don't drink everything, so after the animals have drunk, ok, to their fill, the remaining water has to be drained away and to them that is a lot of water wastage... (Local government representative 1).

To overcome this obstacle key informant 5 asked the project team for some assistance:

In case there is any assistance, they would assist us in finding ways of the water that we put in that trough, is just wasted so we just let it to go free (Key informant 5).

6.3.2 Behaviour

6.3.2.1 Conceptualized changes in behaviour

The project proposal stressed the importance of strengthening partnerships between stakeholders as a consequence of the project intervention by describing the following goal:

“Initiate and manage partnerships between universities, development agencies, policy makers at various levels and farmer groups for mutual learning on efficient water use in smallholder agriculture through water innovation platforms” (WATERCAP 2010: 11).

These partnerships were expected to facilitate future efforts addressing water vulnerability of smallholder farmers. Further, conceptualized effects of improved partnerships were sharing ideas among partners as well as promoting synergies (WATERCAP 2012: 6). The focus was placed on enhancing academic partnerships between universities and on the intention *“to use local research skills and integrate a symmetrical North – South partnership to enrich the South-South collaboration among Africa [sic!] institutions”* (WATERCAP 2010: 22).

6.3.2.2 Observed and reported behaviour changes

6.3.2.2.1 Enhanced partnerships

Since the project was still ongoing at the time of the research not much information on enhanced partnerships could be derived. WATERCAP 1a cited the potential for ensuring sustainability of the project through the developed partnerships. The project team would continue with some of its activities, keeping its engagement with the local communities alive and even planned to scale up some of the project's activities (WATERCAP 1a).

6.3.2.2.2 Changed management practises

At the community level, extensive changes of the management practises of the water source took place as a consequence of the project intervention. Livestock owners collectively shared the opinion that watering animals became easier due to the new trough and pump. According to the livestock owners the process of watering their cattle became less labour intensive, requiring less energy and maintenance work (Livestock owner 16). Since the acquisition of a petrol powered pump water was no longer fetched manually (Key informant 1). Key informant 7 emphasised this reduction of required

work by noting that now with the new trough and pump two people alone could manage watering a big herd.

Management practices changed due to the new facilities and the livestock committee was concerned with the maintenance of the new trough and the pump. It had to be ensured that the trough was cleaned every day after the last herd had finished drinking and that the trough was not deteriorating (Key informant 3). The committee also was responsible for purchasing fuel for the pump and maintaining it. The purchase of the pump changed the management practises considerably. Before, watering animals was free of charge, but since the acquisition of the pump livestock owners had to contribute money to pay for fuel and contribute to the required maintenance works (Livestock owner 7).

An important point that changed due to the new water facilities was that from the new trough more animals could be watered at the same time than from the traditional troughs. Observations suggested that the range of animals drinking at the same time was around 40 to 45 head of cattle. This exceeded the capacity of the traditional trough to a large extent as only approximately five head of cattle could water from these structures.

However, several livestock owners complained that the new trough was too high and that small calves could only drink from it as long as it was full (Key informant 3). To overcome this obstacle, local government representative 1 asked the project team to either built a second trough for the calves or to reduce the height of the new water trough. However, not all livestock owners saw the height of the trough as a problem (Livestock owner 5).

In general, community members appreciated the pump and saw it as a means to ease their work:

... because before the project came they were using a lot of energy to draw water from the dam to the watering trough, but ever since they had the pump, they don't use a lot of energy to draw water from the dam to the trough (Key informant 2).

Yet some criticism was made. During the dry season the number of animals taking water from the valley tank was too high (Livestock owner 14). The pump could not deliver water at a sufficient rate so that during the previous dry season livestock owners had started to use the new water trough and the pump as well as the traditional troughs (Key informant 1).

In addition to the insufficient flow rate of the pump, maintenance of the pump has proven to be tricky. Since its acquisition it broke several times and livestock owners took up using the traditional troughs again. According to local government representative 6 community members had approached him in the past when there was a problem with the pump. However, WATERCAP staff 4 did not see a problem with the pump itself but with the community's attitude towards the engine:

... then we will see make sure that we get a robust pump and that pump comes from Japan, it uses about .6 of a litre to pump 4000 litres that's good, so, that's quite a few, and I mean you have heard the arguments that they tell the pump has failed, and it's no, the pump doesn't fail, so what's happening, every time the pump has issue, they don't call me, of course maybe, my approach, at times, I'm not that humble, when I believe in something, because I know that pump is not going to fail, so when the pump fails, they don't call me, they call [WATERCAP staff 5], then [WATERCAP staff 5] tells them, I'm not an engineer, call [WATERCAP staff 4], they never call me, it's me to call them, you see, ok, open the plug, clean it, and of course I know it's, that pump fails not because it fails, it fails because they don't like it (WATERCAP staff 4).

Another criticism was that in case of a failure of the pump the new water trough was located too far away from the valley tank to fetch water manually (Stakeholder workshop). Therefore, livestock owners expressed the request to construct a smaller concrete trough next to the valley tank for cases like this (Stakeholder workshop).

To overcome the problem of pump failures and the inadequate flow rate the WATERCAP team suggested purchasing a second more powerful engine to the livestock owners. The project team would contribute half of its price if the livestock owners managed to collect the other half of the acquisition costs (WATERCAP staff 3, pers. comm.). The already acquired pump would then function as a backup (Key informant 1).

Livestock owners called for training on how to best manage the new facilities by the team from Makerere University or the veterinary officer as they felt like a major shift in technology had taken place (Stakeholder workshop). Opposed to this the WATERCAP team did not share this opinion, arguing the local community had had sufficient trainings in the course of the project's implementation:

... those guys you see them, you can train them, those guys are not short of training and if anything they have if you ask them what kind of trainings they have had in the past you realize that they have had everything, they have had all sorts of training but still the change of practice, the change of mentality because it is this is something that is handed to them generation after generation... (WATERCAP staff 5).

6.3.3 Looking at it from a little distance – Stakeholders' reflections on the project's effects

WATERCAP team members saw some difficulties in the project design and its implementation regarding sustainability. To ensure sustainable changes at community level WATERCAP staff 5 detected a general dilemma with the short lifespan of development projects bearing the risk for communities of being left to their own resources after the project period:

Yeah, and that's the problem with the project approach to development because the project has a time frame and it's, it has to finish, it doesn't matter whatever the status is in the community, it has to finish and they ask you for results and many times, of course things like this happening, you can show, ok, the results there is this and there is that and that but then the ability to continue is not there, so the project approach to intervention to me, is not the best approach to development but in the absence of a better alternative I don't know, you assume that well if people really are interested in development and we can demonstrate to them that they can develop on their own easing this and that and that they should be able to pick it up, yeah (WATERCAP staff 5).

A member of the coordinating unit sensed a problem in the fast implementation of the project's activities without sufficiently addressing the underlying social issues (WATERCAP staff 2).

Since livestock owners rehabilitated the traditional troughs after the new water trough was constructed members of the project team were under the impression that the technology itself was a problem and that community members did not approve of it. There was the opinion that livestock owners took up using the traditional troughs again because they did not like their animals to share the trough with other herds (WATERCAP staff 5).

WATERCAP staff 4 voiced some concern that the participation of livestock owners might not be a universal remedy to guarantee acceptance of the new technology:

I can't say that the trust has been built, I can't say that because my training is an engineer, and I believe they have put something there, that's it, I leave the other issues to the social people. Of course the challenge we have, we think because the structure is there and people have participated, they like it, at times they don't like it at all (WATERCAP staff 4).

In contrast to this local government representative 6 expressed his opinion that the new watering facility was an appropriate way of watering livestock in the local context:

Yes, it's very appropriate, if you look at the way that dam was de-silted and the way it looks like currently it's an appropriate technology, the only challenge with that technology is in case of repairs, meeting the costs of the fuel, basically the challenge is that much we face that, but to me it's an appropriate technology if the livestock committee and the water users committee make sure that there is some fee, some

small fee that farmers contribute towards the maintenance and fuel, then for the machine, it's very good (Local government representative 6).

Also, community members emphasised in the stakeholder workshop that to them the new watering facility was a good way of watering their animals. Opposed to the suspicions of parts of the project team (WATERCAP staff 5), during the stakeholder workshop it was stated that livestock owners did not see any advantages of the traditional trough compared to the new water trough. However, they conceded that it would be an even more appropriate way of watering livestock if they had a more powerful engine (Stakeholder workshop). As seen above, at the time of the research the community and the project staff planned to jointly purchase such an engine.

Project team members and local government representatives broached another issue related to sustainable water management. In order to guarantee sustainable water management a sense of ownership of the water source had to be created (WATERCAP staff 2). Local government representative 5 held the opinion that more sensitizing needed to take place to ensure a feeling of ownership for the water source among community members. A member of the project team stressed the importance of building capacity at community level, but at the same time called for more responsibility to be taken up by community members:

... so we said ok, the project can help you to do those things that you are not able to do at the moment but that is basically to kick start you in order for you to gain the capacity to do it yourself cause like last time when we were there were claiming oh no this pump is not strong enough we need a bigger pump and whatever and we told them ok if you want a bigger pump you have to buy one (WATERCAP staff 5).

This member of the project team concluded:

No at the moment I can't even say we succeeded because the same situation can still happen that they can go back to where they were again and this is something that will take, can take a bit of time because each time you discover ohoh I thought this was the problem but that's not actually the main problem then they say oh now it is this one, you work on that and then another issue comes up and say probably the other one was not even the real problem then you start working on another so it's part of the development process but I think it will take a little longer and requires a little bit more resources to work with them up to a point when they can actually start running it themselves on a sustainable manner, I cannot say, yes at this stage we have succeeded because we have done some activities there which are promising but there is a high potential that it can fall back to the same position where we started, so the sustainability of that effort, for example we need to keep in contact with them to ensure that they strengthen their community, cohesion and working together and learning to contribute to maintaining (WATERCAP staff 5).

7 Discussion

7.1 Discussion on the project design

In theory, projects focusing on community-based management should ensure participation of local communities, control over and ownership of their resources as well as cost sharing. In further consequence this would lead to empowerment of local communities, increased efficiency and sustainability (Lockwood 2004: 8). As such, these principles indicate strong parallels with the processes and effects conceptualized by and partly complied with the WATERCAP project. Conceptually the WATERCAP project focused on participatory approaches, on the one hand, to enable mutual learning and improve partnerships among relevant stakeholders and, on the other hand, to ensure a sustainable use of water resources.

However, the approach to community-based management has been criticised for falling behind expectations when put into practice. In the opinion of critics the delivery of development interventions promoting community-based management does not correspond with its intentions (Blaikie 2006; Kellert et al. 2000). However, some scholars see the reason for this shortfall in the design of projects that promote community-based management (Fieluma 2011: 174).

Leeuwis and Hall (2010) conducted a study on the roles of research and extension in the development process. This study was undertaken in the context of the challenges faced due to climate change and food insecurity. Their work assessed gaps in the deployment of *“innovation support services for climate change adaptation”* (Leeuwis and Hall 2010: 5). They stress the importance of *“coherent technical and institutional innovations”* for an adequate climate change adaptation (Leeuwis and Hall 2010: 5). The sole introduction of technical solutions would not lead to the desired improvements of people’s livelihoods (Leeuwis and Hall 2010: 7). Thus, changes of social structures are needed too. In this context institutions relate to *“the formal and informal rules and organisational forms and policies through which society is ordered”* (Leeuwis and Hall 2010: 6). They further argue that the adaptation to climate change can be seen as a *“process of innovation”* (Leeuwis and Hall 2010: 24). With regards to the WATERCAP project this approach can be referred to as the framework of the project.

Yet, the key concepts of the WATERCAP project were not jointly defined but anticipated as given concepts. The proposal remained vague about concrete implementation steps. This suggests that the different backgrounds of the project

partners influenced the ideas project partners had about IPs and in further consequence shaped the different manifestations of the IPs. Leeuwis and Hall (2010: 25) stress the importance of the development of similar or complementary definitions of and opinions on *“relevant models of reality, problems, goals and boundaries as a basis for identifying desirable, feasible and acceptable options for change”* in order to ensure aligned actions of all stakeholders. The lack of a joint definition of key WATERCAP project concepts, thus, suggests that no congruent conception for the project took place. This left the different project partners to their personal perceptions on the processes relevant for the project. At the project level regarding information on the activities happening in the IPs, the coordinating unit was dependent on the reports given by the implementing unit. The interviews showed that members of the coordinating unit drew a picture of the IPs that was based on the activities outlined in the proposal rather than on the activities on site.

Figure 12 juxtaposes figure 9 (page 42) in opposition to figure 10 (page 45) emphasising the diverging perceptions the project staff had on the project system compared to the way it was conceptualized in the proposal. The conceptualized figure (top) illustrates the four IPs of the WATERCAP project in Kenya and Uganda as loose pools of the different actors. The connecting lines show the alliances of the donor agency, the coordinating unit and the three concerned universities as project partners. The overlaps of the IPs indicate the multiple involvements of the three universities and RUFORUM. Opposed to this, the lower illustration centres the project partners around the two universities in Kenya and Uganda, and puts BOKU University outside any interaction or activity in Kenya or Uganda.

With regards to the roles and interactions between the different stakeholders, it has to be noted that BOKU University was displayed in the centre of the project partners by the interviewed WATERCAP staff, linking the Austrian donor agency with RUFORUM and the two African universities. In contrast to this, conceptually it is the role of RUFORUM as the project coordinator to connect the different partners.

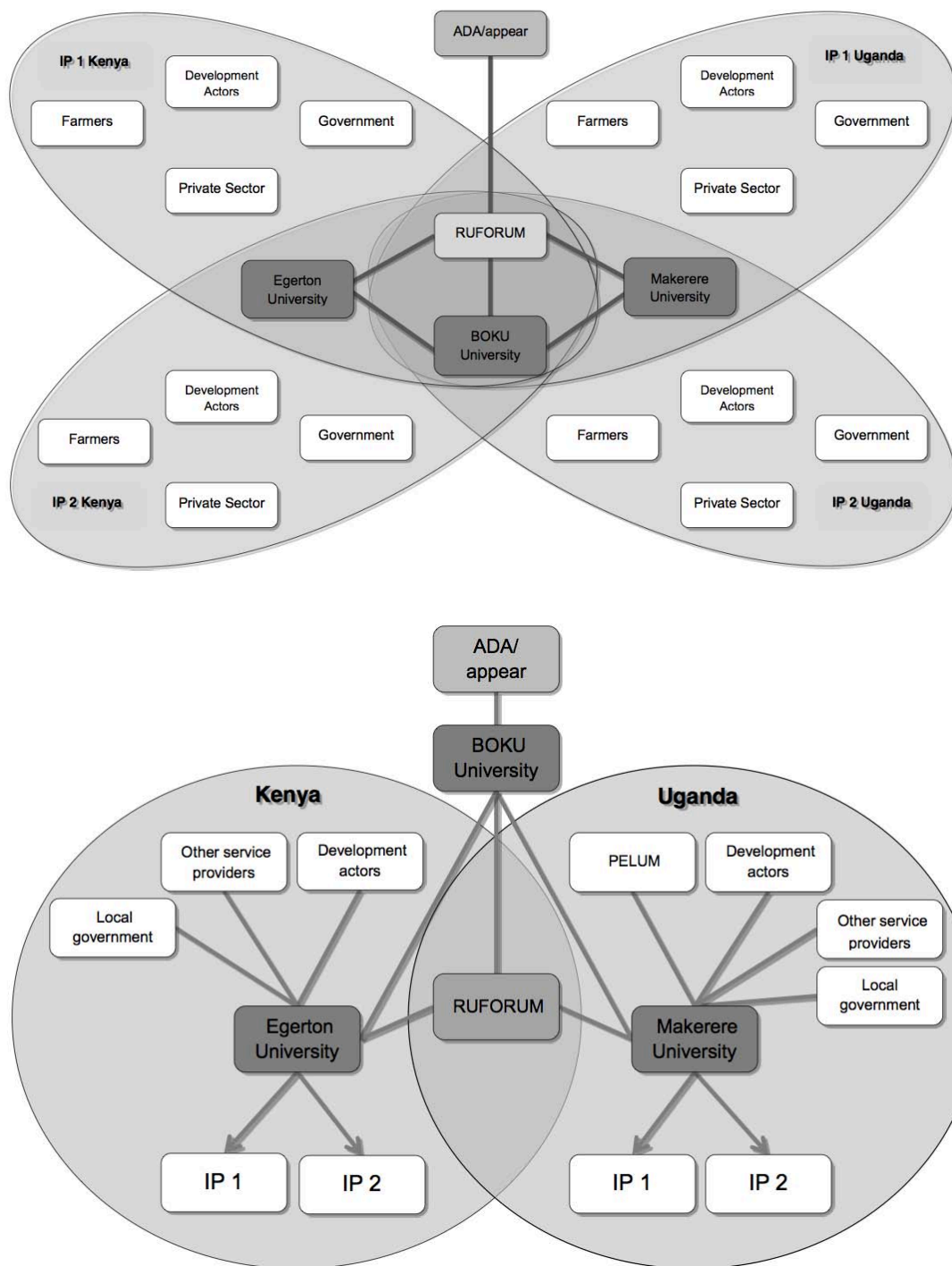


Figure 12. Comparison between conceptualized (top) and perceived WATERCAP project system (bottom)

In accordance with the way IPs are characterized in the literature (cf. Nederlof et al. 2011; Kilelu et al. 2013), the project proposal conceptualized the IPs as multi-stakeholder platforms. The various stakeholders such as researchers, private actors,

members of NGOs and local communities would jointly form an IP and identify the problems and challenges as well as mutually plan and implement the project's activities. IPs are a means to trigger change among actors in the platform that eventually would have effects on the broader environment (Kilelu et al. 2013: 66). The interaction of the various actors is at the core of such platforms and a prerequisite for innovation (Nederlof et al. 2011: 68). IPs are dynamic and flexible. The way in which the IPs are designed has impacts on the way they function. It is essential that the various actors jointly agree on the platform's formalisation and that *"the platform is grounded in the field reality"* (Nederlof et al. 2011: 69). At the beginning of the process, the stakeholders relevant for the platform need to be identified and it should be defined how they are relevant and how they could contribute to a project (Nederlof et al. 2011: 69). According to Nederlof et al. (2011) one of the most important steps at the initial stages of an IP is *"to ensure the stakeholders have ownership over the idea"* (Nederlof et al. 2011: 69).

Opposed to the conceptualized formalisation of IPs, interviewed WATERCAP staff drew a different picture of the IPs in the project. Local communities were equated with the IPs, suggesting them to be the beneficiaries and (passive) recipients of the project's activities. Other actors like government representatives, service providers or NGOs would work with the universities in Kenya or Uganda and would perform their activities upon the IPs, respectively the local communities. Also, according to the perspective of one WATERCAP staff member, the IPs had not been formed at the time of the research but would develop during the remaining project time. These perceptions on the IPs indicate a general misconception of the very same type, since in theory IPs are multi-stakeholder platforms developing at the beginning of a process with equal rights of all actors. Therefore, from a CAS and specifically AIS perspective the potential to trigger innovation was not given in the course of the WATERCAP project. While agricultural innovation thinking has made its way into project and policy proposals, *"there is still an uncomfortably large gap between what is known about enabling innovation for development and what is evident in mainstream policies and practices"* (Hall 2009: 31).

Another challenge encountered in the project design was the timeframe and goal setting of the project. While the formation of IPs and the adaptation of participatory approaches are time-consuming (Lockwood 2004: 5), a three-year project period might be an insufficient timespan to fully engage in such processes. Connected to this is the dependency of such projects on donors financing them. The conflicts related to the

internal budget allocation of the WATERCAP project reflect the constant chase for project money. While donors link their funding to the fulfilment of predefined goals, which organisations or project applicants need to fulfil, the requirements on the ground might be completely different. As a consequence projects tend to be rather output oriented than process oriented. Contradictory to this is the formalisation of IPs. Ideally, problems, goals and possible solutions should be jointly discussed and defined in such IPs by all stakeholders in the process (Nederlof et al. 2011: 69). Therefore, Triomphe et al. (2009: 163) call for a shift in donor agencies' conditions and standards. Rather than requesting that projects to stick to inelastic *modi operandi* and to deliver predefined outputs, donor agencies should focus on enabling project environments that allow for flexible designs and negotiations among all stakeholders (Triomphe et al. 2009: 163). Whittington et al. (2012: 20) see a general problem in donor-financed projects. According to them such projects tend to be "*one-time investment programs, designed to meet only the immediate needs of rural communities*" (Whittington et al. 2012: 20). The challenge connected to this approach is the possible ongoing dependency on external funds in case capacity building and empowerment of local communities do not take place (Whittington et al. 2012: 20). Too often, participatory approaches are used as labelling to gain approval for decisions from external actors (Fieluma 2011: 174).

Participatory approaches as well as institutional support mechanisms are time consuming and require a lot of engagement (Whittington et al. 2012; Lockwood 2004: 5). Participatory approaches and ongoing post-project support stand in sharp contrast to the current project environment, which is output orientated and works with limited time frames (Triomphe et al. 2009: 163). The empirical assessment made it clear that a three-year project period is an insufficient timespan to truly engage in participatory processes and enable mutual learning among all stakeholders. To overcome these structural constraints not only do the way projects are designed have to shift to allow more flexibility but also the system of donor financing needs to be re-thought. Today, participatory approaches have made their way up to the current development paradigm. Yet, they remain nothing more than catchwords, if they are not put into practice by creating a project environment that facilitates such approaches. As long as projects are output-orientated, they will continue to take up the cause of participatory approaches without truly engaging in them. It is thus paramount to create a project environment, which allows multi-stakeholder projects to operate in a flexible and open way and therefore implement participatory processes accordingly. Local community

members need to be put at the centre of innovation systems (Scoones and Thompson 2009: 30). Hence, within the project environment room must be created to allow for diversity and unforeseeable processes that are inherent in (agricultural) innovation systems.

7.2 Discussion on the project's processes

The empirical findings showed that a joint formalisation of the IP by all stakeholders was not the case for the Nakasongola IP. Rather the community to work with was chosen by the implementing unit.

Nederlof et al (2011: 69) see an advantage in building IPs on existing initiatives as this potentially accelerates the platform's development, this would ensure that the project builds on previous realizations and also would guarantee the recognition of and respect of previous achievements. However, rather than closely working with staff from the previous project who had already gained experience in the community, the previous staff merely introduced the WATERCAP team to the community and was not further involved in the projects activities. Therefore, it can be assumed that the advantages suggested by Nederlof et al. (2011) did not necessarily apply to the WATERCAP project.

During the empirical assessment it became apparent that the group of actors were different than those anticipated by the analytical framework of this study. Instead of other development actors such as NGOs, staff from the previous Makerere initiative were relevant to this project. NGOs' potential to link university actors to locally acting stakeholders was recognised in the proposal but not realised during implementation. Interviews showed that project staff members thought it was more difficult to understand local dynamics and detect problems due to the lack of support from a locally acting NGO. In the literature NGOs are considered as important actors in participatory processes with the potential to improve communication between stakeholders (Boakye and Akpor 2012: 513). The fact that the NGO World Vision is strongly represented in the area, working also with community valley tanks suggests the assumption that collaboration with World Vision could have been beneficial for the WATERCAP project. This would have been in line with the proposal's intention to avoid duplication of efforts.

The empirical findings of this study show that for Research for Development projects the interactions among stakeholders strongly influence success. Especially in the context of AIS the involvement of various stakeholders is a prerequisite to guaranteeing knowledge exchange, interactive learning as well as strengthened linkages among stakeholders (Hall 2009: 33). Even though they were conceptualized, the absent formalisation of an IP hindered such processes. Therefore, it can be argued

that projects engaging AIS in need to comply with the characteristics of innovation systems.

Participation and information flows

Based on the findings from the interviews conducted, the group exercise of drawing a stakeholder map, the stakeholder workshop and the researcher's observation, figure 13 was drawn. Figure 13 includes the stakeholders who were involved in the WATERCAP process (white boxes), stakeholders who were brought on board during the implementation (light grey boxes) as well as stakeholders who possibly could have been involved (darker grey boxes). The different stakeholders' relationships are indicated by the connecting lines.

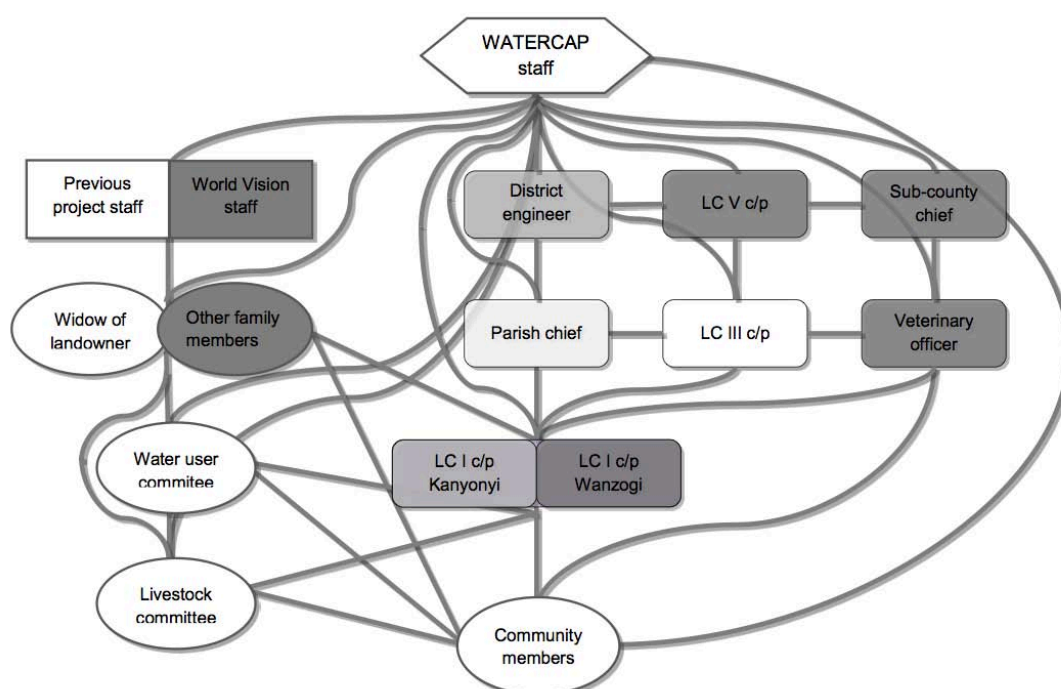


Figure 13. Map of involved (white), belatedly involved (light grey) and possible stakeholders (dark grey) in the Nakasongola IP (compiled by author derived from interviews, group exercise and observations)

In addition to World Vision, as a locally acting NGO that could have supported the project, members of the local government should have been engaged more actively in the project. The insufficiently involved local government members are representatives from all government levels, ranging from the district to the village level. Mobilisation would be easier with the active participation of local government representatives who could function as a link between the project team and the local community. Moreover, the family of the supposed late landowner is rather large, including four widows and

more than 40 children. It can thus be argued that more than one representative of the family should have been actively consulted. Figure 13 clarifies that local stakeholders participated in the project's activities. Nevertheless, the empirical findings also brought out that some key actors who had a stake in the project were not actively involved.

To analyse the degree of participation, this study is based on the suggested typologies of participation found in the literature (Arnstein 1969; Tufte and Mefalopulos 2009). Tufte and Mefalopulos (2009: 4) differentiate between two main objectives of participation. On the one hand participation can be a means to an end and on the other hand also an end in itself. The latter approach sees participation as "*a goal as an empowering process*" (Tufte and Mefalopulos 2009: 4). Alternative to this stands the use of participation of local communities as a tool to reach a predefined objective set by outsiders (Tufte and Mefalopulos 2009: 4).

Based on Arnstein's ladder of participation and the typology provided by Tufte and Mefalopulos (2009), different levels of participation were utilized in the WATERCAP project. For the case of Wanzogi and Kanyonyi village, all levels of participation could be observed, depending on the involvement of the individual stakeholders and the issue under investigation. Concerning livestock owners who were not aware of the project at all and local government representatives who were not consulted by the project team, no information flow and therefore no participation took place. The empirical assessment suggests that passive participation was a key part of the project's activities. The study site was selected by the implementing unit of the WATERCAP project team without the involvement of the local community. Local community members thus received information about the project's activities but did not take part in its conceptualisation. Oenga and Ikumi (1997: 62ff) show evidence from Kenya where limited acceptance levels of community-based management projects were observed when initiated by external actors. Opposed to this, projects evolving from communities' initiatives or with the involvement of local communities from the early stages of a project show better performances and higher levels of sustainability (Whittington et al. 2012; IRC 1997: 81f). Participation by consultation could also be detected. One of the main drivers for people to participate in projects is their wish to change the current situation (Boakye and Akpor 2012: 512). However, to change the status-quo joint goal setting would be required. For the case of WATERCAP, the predefined goal of constructing a new water trough and purchasing a pump existed beforehand. Thus, livestock owners had limited control over the conceptualized activities. Hence, decision power lay with the project staff. Nevertheless, concerning

the design of the new watering scheme, livestock owners had a say in the concrete execution. This involvement of livestock owners in the design of the new watering system can be rated as an important attempt for community participation. However, the desire of project staff to quit working with the community in Wanzogi and Kanyonyi when the implementation did not turn out the way they had intended, is an indicator for the unilateral comprehension of the project's activities and its desired outcomes.

The fact that approximately 60 households were mobilised by the local water user committee was explained by their proximity to the valley tank, which can be seen as reasonable considering the time and effort required for mobilisation. At the same time this might exclude community members who also use the valley tank but live further afield. Fonesca and Bolt (2002: 58) describe the case of the dysfunctional communication between a local community and project staff in Benin. Community members raised the complaint of not being informed about meetings. This can be seen as a consequence of the project staff meeting with only a few community members and considering this a consultation of the whole community. This consultation then resulted in limited acceptance of the new facility by large parts of the community (Fonesca and Bolt 2002: 58). To some extent this problem could also be observed in the WATERCAP project. Due to the intense communication of the project staff with only a few community members, others felt excluded.

According to Tufte and Mefalopulos (2009: 17) many projects take up the cause of participatory approaches, but do not attempt to engage in them in practice. Based on the empirical findings the WATERCAP team used participatory approaches, a fact that has to be judged favourably. However, as suggested by Tufte and Mefolopulos (2009:17) it is not implicit that projects actually put this into practice. The WATERCAP team considered the participation of livestock owners in meetings and construction related works as clear evidence for the approval of the project's activities by the livestock owners, a conclusion that might be too narrowly considered. Voluntary labour inputs are regarded as rather low forms of participation and do not ensure communities' involvement in and approval of decision-making processes (IRC 1997: 115). Blaikie (2006: 1951) sees a constraint to community-driven and participatory approaches, as professionals might start to feel disempowered when communities gain more capacity to formulate their demands and take over control over development processes. Without insinuating that this was necessarily the case for WATERCAP project staff, participation, which occurred in the case of Wanzogi and Kanyonyi, only resulted in limited empowerment processes. In order to speak of empowerment the

control over decision-making processes needs to be in the communities' hands (Friis-Hansen and Duveskog 2012: 414). Empowerment would be to gain the capacity to effectuate change according to one's own value and belief system. This and can be regarded as an advanced form of participation (Friis-Hansen and Duveskog 2012: 414). Yet, for the WATERCAP project it can be argued that participation functioned as a tool to approve decisions made by project staff. In order to ensure stronger forms of participation, community members should instead have been involved from the very beginning in the design and planning of the project, starting from its conceptualization, rather than being chosen by outsiders. Opposed to this in the WATERCAP project, 'traditional' roles of stakeholder groups were not challenged. The researchers guided the process as experts while community members were the more or less passive recipients. Yet, from an AIS perspective the interaction among stakeholders enables the creation of new knowledge, leading to innovation. This would also guarantee community members' role as equitable development partners (Dungumara and Madulu 2013: 1014). Rather than dominating the process, researchers should take the role of innovation brokers, facilitating the interaction among stakeholders and in further consequence change processes.

Individual versus group interests and dynamics of power

The empirical findings showed that one of the major challenges experienced was the dichotomy between individual and collective interests. Friis-Hansen and Duveskog (2012: 419) argue that working with groups can have advantages compared to working with individuals, as working with groups may facilitate learning processes. Nevertheless, the empirical assessment showed that one of the major challenges for the WATERCAP team was to define the local community in Wanzogi and Kanyonyi, and, therefore, get a clear picture of the group of individuals to work with. The unclear situation about the extent of the valley tank users challenged the way in which the project team could interact with the community. In the course of the fieldwork for this study it became apparent that seeing the community as a homogenous group was a too narrow consideration. Fonesca and Bolt (2002: 67) support the view of communities as heterogeneous groups and while everybody can share the overall objective, personal interests might vary (Tufté and Mefalopulos 2009: 19). Although the aim of improving the water quantity would not be challenged by the community considering the water scarcity in the area, this does not necessarily result in completely shared interests of all actors.

It is argued that a prerequisite for working with communities or groups is that all stakeholder groups are represented (Fonesca and Bolt 2002: 67). Working with communities takes more effort and increases complexity compared to merely interacting with individuals. In order to understand the social dynamics around communities, outsiders need to engage with the community, which is a time-consuming process (Lammerink et al. 1999: 4). While the involvement of single persons might fall short of the complexity of the social dynamics, interacting with representatives of the different groups might be an alternative. Although it is clear that outsiders are not familiar with the specific local circumstances, attention has to be drawn to the representativeness of individuals for the different groups in a community (Fonesca and Bolt 2002: 75). Tufte and Mefalopulos (2009) see a possible way of dealing with this complexity in not anticipating communities as homogenous but rather “as a *sum of different groups*” (Tufte and Mefalopulos 2009: 19).

The need for unanimously accepted representatives became apparent at different levels in the community in Wanzogi and Kanyonyi, namely for the livestock owners using the dam in general, village leaders, the family claiming to hold the land title as well as between members of the two villages.

Since the valley tank is located at the border between two villages, the dynamics between these two villages were important. According to Fonesca and Bolt (2002: 32) community projects concerned with more than one village tend to increase in complexity. In multi-village projects conflicts may arise between the villages with regards to differing interests (Fonesca and Bolt 2002: 32). In the case of Wanzogi and Kanyonyi such conflicting interests could be observed. Furthermore, while the water facility has been managed as a community resource since its construction, the project heavily focused on the interaction with individual community members, resulting in conflicts among community members and reinvigorating long-existing rivalries. In turn, these conflicts again impacted the way project staff could interact with community members. The first contact between the project staff and the community and the resulting tight interaction between project members and the first contact person turned out to be challenging for the project’s activities. According to Fonesca and Bolt (2002: 75) project staff tend to take the information given by their first contact persons for granted without questioning their roles, which in further consequence might create a disruption of the social system and create conflicts. To overcome this constraint Fonesca and Bolt (2002: 75) propose to double check information provided by the contact person, a process that might be time consuming. Based on the empirical

assessment of the interaction of the WATERCAP team with the local community it can be assumed that the project staff relied too heavily on the information provided by the first contact person. This had implications for the involvement of local leaders but also for the understanding of the land tenure situation concerning the valley tank.

Power and leadership structures were relevant to the WATERCAP project as the potential to mobilise community members was strongly related to the involvement of key actors. As Saito (2007: 7) states Uganda is a hierarchically organised country, implying the importance to consult and involve leadership structures in any project activities. The lacking involvement of local leaders hindered mobilisation processes and caused some resistances.

Hence, an important step towards more participation and backing in the community would be to deal with the community as a whole rather than primarily interacting with individuals. In order to avoid such bias, more attention should be drawn on internal dynamics and power structures, both conceptually and in practice. Projects do not act in a power vacuum, thus one should be mindful of social dynamics and consider ways how to carefully deal with them without disrupting local social structures. Creating a 'true' IP would help to avoid biases as all stakeholders have equal rights. At the beginning of such process a comprehensive stakeholder analysis needs to take place to facilitate the identification of relevant stakeholder groups.

Ownership and land tenure

The empirical findings showed that the situation regarding the land ownership was rather complex. However, the dispute around the land tenure system of the community-managed water resources in Wanzogi and Kanyoyini is not a singular occurrence in Uganda. As Hartter and Ryan (2010: 821) show, there is a certain discrepancy in perceptions of rights concerning wetlands used and managed by communities in Uganda. While landowners generally perceive wetlands as their own, local government leaders and community representatives emphasise the communal aspect of land where communally used resources are located.

As seen in the literature (Harvey and Reed 2007; Fonesca and Bolt 2002; Smith 2011), ownership of community-managed resources is an important aspect that has to be considered in projects. Ownership can occur in different forms, from a sense of ownership or responsibility for a certain resource (Harvey and Reed 2007: 371) to legal ownership (Smith 2011: 28). Whichever form the ownership takes, it has to be clear to and accepted by everybody (Fonesca and Bolt 2002: 28). Here lies one of the major

challenges encountered by the WATERCAP staff in Wanzogi and Kanyonyi. During the empirical assessment it could not be clarified who held the legal ownership of the land. Not even local government representatives could shed more light upon the issue. In order to clarify the situation it was repeatedly stressed that the land had to be surveyed. Lammerink et al. (1999: 7) report of a case where a community collectively purchased the piece of land for a community-managed water resource from the landowner. Even though in the reported case the water structure was yet to be constructed, it shows a possible way to solve a dispute over land. If surveying the land reveals that the land is privately owned, jointly buying it could be an option for the community in Wanzogi and Kanyonyi. However, as long as the situation regarding the ownership of the land surrounding the valley tank is not completely clear, livestock owners will be kept in uncertainty regarding the access to the water source in the long run and thus might not be willing to fully engage in the project and any further developments. Lammerink et al. (1999: 4) urge for project staff to attempt try to involve all stakeholders and jointly find a solution to internal struggles or conflicts. The situation around the land tenure revealed that development interventions are embedded in social systems that are characterized by complexity, which needs to be addressed by development interventions.

7.3 Discussion on the project's effects

Learning and Partnerships

The improvement of universities' curricula was the core goal of the WATERCAP project. This approach is in line with the call for improved education for researchers and extension officers in the literature. Reflexive and mutual learning is needed to promote AIS. This also, but not exclusively applies for the educational system. While some educational systems still stick to conventional approaches, curricula have to be adjusted and new knowledge and innovative approaches supported (Scoones and Thompson 2009: 21). Triomphe et al. (2009) see a need to develop better education for researchers "*in innovation systems, action-research in partnership and other relevant concepts, approaches and practices*" (Triomphe et al. 2009: 163). Especially when dealing with climate change adaptation, new strategies from researchers and extension workers are needed (Leeuwis and Hall 2010: 8). Such new skills include facilitating processes, networking, brokering negotiations, resolving conflicts or identifying opportunities and constraints (Leeuwis and Hall 2010: 7). As the project was still ongoing at the time of the research for this study, no definite statement about the improved curricula at Makerere University can be made. However, since the formalisation of IPs did not take place in the way it was conceptualized, it remains questionable to what extent mutual learning has taken place. Even though the declared goal of the WATERCAP project was to strengthen universities' capacities to reduce climate change induced water vulnerabilities, the sole focus of generating lessons for universities and improving their curricula might be too narrowly considered and might ignore the complexity around the whole system involving all relevant stakeholders.

In order to promote innovative practices traditional hierarchies have to be replaced and an environment created that allows for shared learning experiences. On side of university stakeholders a shift in mindsets has to be fulfilled allowing for more openness. The sole introduction of participatory approaches will not suffice in achieving mutual learning processes. In the context of AIS local stakeholders have to be put in the centre to cope with change. A platform must be created where the existence of different forms of knowledge is recognized and knowledge exchange is made possible.

Sustainability of water use and changed management practices

Another declared goal of the project was to ensure sustainability in terms of water use and management in the local communities. Due to the activities of World Vision in the area it can be assumed that the pressure on the valley tank in Wanzogi and Kanyonyi will decline over the next few years since more community-managed valley tanks are available in the area. Apart from increasing the amount of available water, the empirical findings suggest an improvement in livestock owners' livelihoods due to the project's activities.

Experiences from the past suggest that local strategies to deal with scarce resources tend to be eroded by modern developments (Dungumara and Madulu 2013: 1013). Dungumara and Madulu (2013) show in their study on participatory approaches in Tanzanian Integrated Water Resource Management, that projects are inclined to ignore local knowledge when implementing new water systems, which results in a rejection of these structures by local communities (Dungumara and Madulu 2013: 1012). Therefore, they call for participation in the development of new water systems and incorporation of local knowledge in the design of water facilities. This would reduce conflicts and lead to a more sustainable use of such resources (Dungumara and Madulu 2013: 1014).

The acquisition of a petrol powered pump constituted a major shift in technology. As stressed in the literature (Nederlof et al. 2011; Leeuwis and Hall 2010), the sole introduction of a new technology does not suffice to ensure sustainable changes in people's lives. Smith (2011: 25) illustrates experiences from Suriname where communities encountered difficulties with running newly installed pumps. Smith (2011: 54) argues that all the encountered difficulties with regards to the newly installed pumps could have been solved if the communities had received some ongoing support with the operation and maintenance of the new watering facilities. This is in line with suggestions expressed by other authors (Whittington et al. 2012; Lockwood 2004). Scholars unanimously agree that communities require institutional support with the maintenance of their resources. Communities are usually capable of executing 80 percent of the required maintenance work themselves while they need support with the remaining 20 percent. In this context Lockwood (2004: 12) speaks of an 80/20 division. Depending on the introduced technology maintenance works are more or less elaborate and therefore also determine the required assistance (Kamruzzaman et al. 2013: 29). For the case of Wanzogi and Kanyonyi such assistance could consist of

support in servicing the pump, since livestock owners had encountered difficulties with running it. Whittington et al. (2012) examined the sustainability of community-managed water sources in Peru, Bolivia and Ghana. In their study they expound that communities tend to ask for post-construction support if they encounter difficulties in running the facilities or if there is a conflict around them. Different actors, such as local government officials, local NGOs or staff who installed the facility, can provide this assistance (Whittington et al. 2012: 9). This is in line with experiences from Wanzogi and Kanyonyi. When the pump broke down, livestock owners approached project staff as well as consulted local government representatives at the sub-county. Project staff decided on the pump based on cost-effectiveness considerations. Yet, since the pump's performance turned out to be poor the project team suggested to purchase a second stronger pump and asked livestock owners to contribute half the acquisition costs. In this context it might have been more reasonable to purchase a pump customized to the local needs in the first place.

Another form of institutional support are various types of technical training. Whittington et al. (2012: 18) show in their study that communities that receive training are more likely to sustain community-managed water structures. Also, technical training improves communities' satisfaction with their water facilities. Community members gain further capabilities and can take full responsibilities of their own resources, which is in line with the principles of the community-based management approach (Whittington et al. 2012: 20). Although livestock owners in Wanzogi and Kanyonyi received training on how to use the new trough and pump, they called for further training sessions by WATERCAP staff and the veterinary officer, which might have positive effects on the long-term performance. It is beyond the scope of this thesis if livestock owners received additional training sessions after the research for this study.

Another aspect connected to the new petrol powered pump is the issue of cost sharing. Since the purchase of the new pump livestock owners in Wanzogi and Kanyonyi contributed to fuel costs. Experiences show that communities tend to have difficulties in collecting funds for maintenance works and future breakdowns. While running costs are covered, reserves cannot be set aside for repairs (Smith 2011: 53). A major challenge here is that tariffs often do not represent the actual costs (Oenga and Ikumi 1997: 65). Even though information on their monetary contribution for fuel provided by livestock owners in Wanzogi and Kanyonyi varied, the system to collect money to buy fuel seemed to be working. However, no information was available if the committees

could save up some reserves for unexpected expenses. This issue probably needs to be assessed after some time operating of the new petrol powered pump.

A further aspect influencing the sustainability of community-managed water sources is the question of ownership. As seen above, the land tenure situation is disputed. Besides the legal ownership, the sense of ownership or, as Harvey and Reed (2006: 371) call it, a sense of responsibility for the water resource, needs to be inherent for the users of the valley tank. While over the last few decades livestock owners had developed a strong feeling of responsibility for the community-managed water resource itself, most livestock owners did not develop a sense of ownership for the WATERCAP project and its activities. The dispute about the land tenure has further hindered the creation of a sense of ownership for the development intervention due to the uncertainty connected to the land tenure. As emphasised by Fonesca and Bolt (2002: 28) the legal ownership does not necessarily have to be in community's hands. However, it has to be clear to everybody (Fonesca and Bolt 2002: 28).

Connected to this sense of ownership is the responsibility to manage and maintain the valley tank and the new watering facilities. Functioning water user committees are considered as a prerequisite for the sustainable operation and maintenance of community-managed water structures. In order to guarantee the effectiveness of such committees, accountability is necessary. Members of committees need to be accountable for their actions (Fieluma 2011: 177). A possibility to guarantee the functioning of the committees is to rotate the members on the committees or to give communities the option to re-elect the members in case of satisfactory work (Siman and Ortiz 1997: 55). Even though some livestock owners stated that committee members could be suspended from their capacity, this had never happened in Wanzogi or Kanyonyi. The livestock committee was founded as an addition to the water user committee, after problems had arisen. Moreover, committee members are elected for an unlimited period. Therefore, to increase transparency, it could be appropriate to limit the committee members' term of office.

Generally speaking, the empirical findings suggest that livestock owners are enthusiastic to sustain the new watering facilities. How sustainable the management of the new trough and pump is will be seen over the next years. Experiences from the previous project in Wanzogi and Kanyonyi showed that their newly installed facilities could not be sustained for longer than two to three years. This strengthens the call for post-project support in terms of further training and assistance in servicing the new

petrol powered pump. Yet, this backing does not necessarily have to come exclusively from project staff but could also involve local government representatives. Yet, a stronger involvement of local government representatives throughout the project could have improved their ability and disposition to provide such support. This study deals with a snapshot in time, thus it is beyond the scope of this thesis to evaluate the sustainability of the new watering structures in Wanzogi and Kanyonyi. However, the empirical findings suggest that the new facilities have the potential to improve the water availability in the long run, if the mentioned prerequisites for the sustainable use of community-managed water structures are met. Due to the uncertain future performance, it seems reasonable to call for an evaluation of the medium- and long-term functionality of new facilities after the intervention (Scoones and Thompson 2009: 23). However, such evaluation or impact assessment needs to be independent and above all participatory to guarantee the accountability to the valley tank users, or more generally to the users of any service provided by a development intervention. This stands in contrast to an evaluation assessing project's effects to meet the reporting requirements of a donor agency. This seems to be insufficient in meeting the requirements of projects engaged in system innovation and participatory approaches. This links back to the above mentioned shortfall of the design of Research for Development projects that are donor funded and limited in time. Consequently, engaging in participatory assessments of development interventions has the potential to facilitate further mutual learning processes, which will lead to improved sustainability of future development interventions.

7.4 Reflection on encountered methodological challenges

The fieldwork for this study took place during a three-month period in the second year of the project. Due to the limited duration of data collection for this thesis, no claim to completeness of the findings on the dynamics around the three-year WATERCAP project is made.

It should be noted that during the research process some challenges were faced. One of the biggest challenges encountered in this study was the language barrier. Most respondents in the study area Nakasongola could not speak English and the researcher lacked knowledge of the local language Luganda. Therefore, a translator supported these interviews. Despite the excellent and supportive work of the interpreter, translated interviews were challenging for all participants. Leading an interview while being unaware of the exact course of the conversation and the content spoken was demanding and might have left certain issues unaddressed. Furthermore, translation might have created a more artificial interview-environment, which limited respondents' willingness to give away internal details.

Even though the research team stressed its independent role, most community members perceived the research team as part of the project. This was further compounded by the introduction of the research team to the community by project staff, which also joined for some field visits.

In this study the supervisors of the research team in Uganda and the implementing unit of the project were the same team. This put them in the difficult position of supporting an evaluation of their own work and might have led to some contradiction of interests.

Also, the fact that the translator worked for the implementing unit may have affected the notion of independence of the research team. On one hand this was helpful for the course of the interviews as she was familiar with the topic and local issues. On the other hand it put her in a difficult double-position. In retrospect it might have been preferable to work with an independent translator.

Even though the object under research was a community managed water resource, individual interests might have influenced the study as people had the hope to benefit in one way or the other from the project as well as from the research team. On the other hand getting honest answers to questions about social dynamics and conflicts might have been complicated by the strong social network within the community.

Due to limited facilities at the study site the research team lived at the house of a community member during the field stay. In spite of the research team's effort to emphasise its neutral role the impression of privileging certain community members might have arisen.

Unfortunately no reliable baseline data about total cattle population, water availability throughout the year etc. existed. Furthermore, due to cultural reasons or fear of taxes respondents might not have been willing to give exact information about numbers of their cattle. However, where possible various sources were compared against each other to get reliable estimates, to give an example cattle numbers were compared with numbers mentioned in informal conversations and a cattle census conducted by the local government in the area during the research stay.

Cattle keeping is still a 'male dominated business'. In some cases the male household member in charge of cattle was not available and a female family member interviewed instead. Without underrating women's valuable knowledge these interviews might have given limited insight to specific cattle management issues and the family's involvement in the project as women are not informed about, and involved in it.

Nevertheless, an ongoing critical reflection of the research process was an attempt to overcome these challenges.

8 Conclusion

The empirical assessment revealed deficiencies in the project's design and identified structural constraints limiting its activities.

Based on the empirical findings it can be argued that the formation of an IP as suggested in the project proposal did not take place in the case of the WATERCAP project in Nakasongola. However, in development interventions, the creation of a platform to enable open-ended multi-stakeholder processes is crucial. Above all the establishment of a sense of ownership for a development intervention and participatory approaches can be enhanced when such platforms are instituted. Therefore, time and effort need to be dedicated to engage in participatory processes and to create an environment that enables knowledge exchange. To ensure empowerment of local stakeholders high levels of participation, where local stakeholders have the power over decision-making processes, need to take place. As seen in the case of the WATERCAP project in Nakasongola the exclusion or low levels of participation of relevant stakeholder groups may jeopardize a development intervention.

Furthermore, the case demonstrated that social structures and dynamics have the potential to either hinder or support a development intervention. Therefore, they have to be taken into consideration during the conceptualization as well as implementation of projects. Related to this, is the call for integrating local knowledge in the process and to jointly adapt new technologies. Moreover, in the case of the WATERCAP project in Nakasongola the overall goal was predefined. To avoid diverging understandings of necessary activities and to assure a sense of ownership, an alignment of goals would need to be supported by a joint conceptualization and design of the project by all stakeholders. This would subsequently improve the sustainability of facilities implemented by a development intervention. Providing post-project support to local communities such as additional training or assistance with maintenance works, may further improve the sustainable use of new facilities.

To put this into practice it is paramount to create an environment that facilitates open and flexible approaches. Therefore, project designs promoting open-ended processes have to supersede current project designs that are predominantly driven by predefined outputs. The need for projects with longer timeframes goes hand in hand with project designs promoting open-ended processes. Together, these two changes would allow projects to truly engage in participatory processes.

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