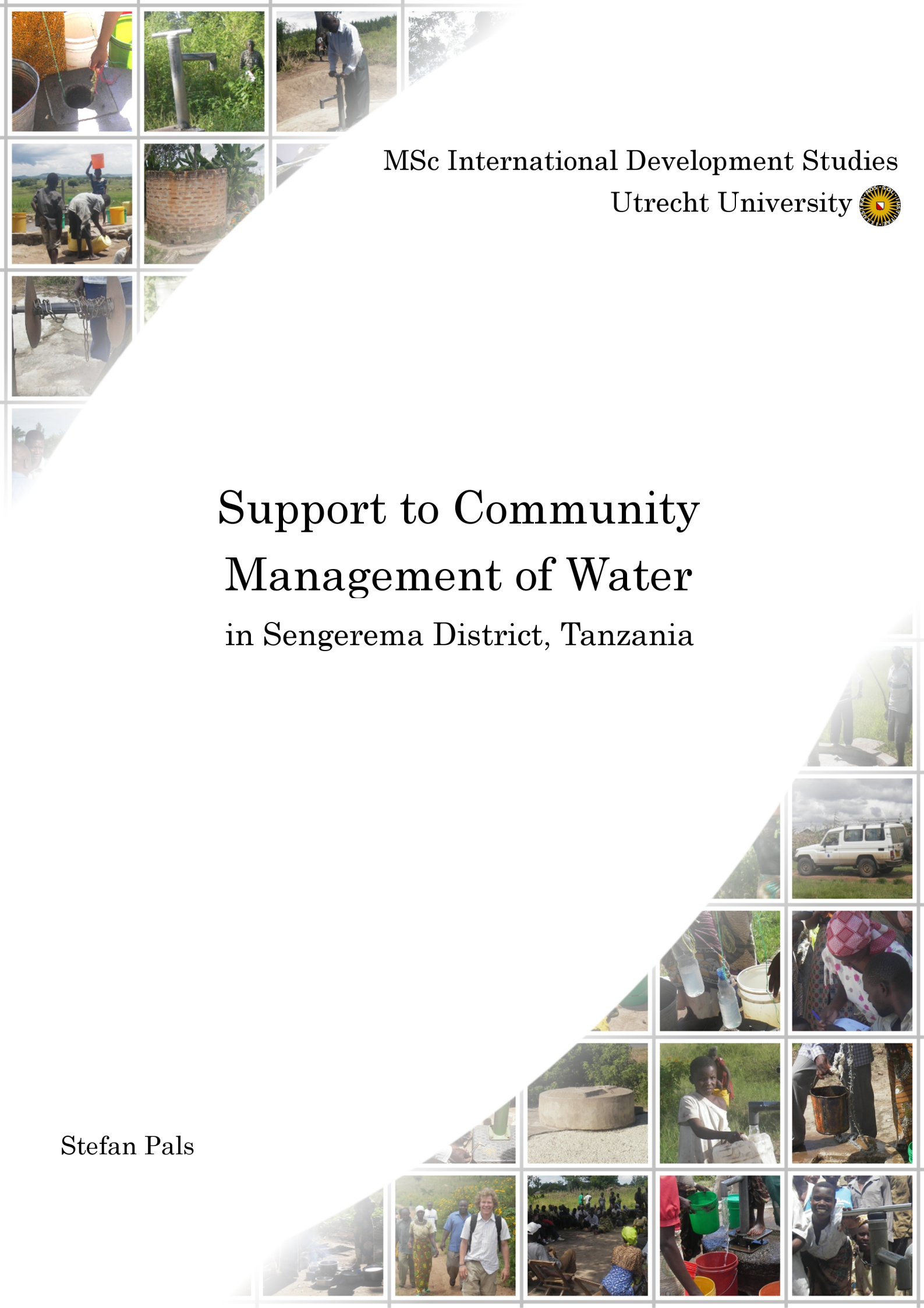MSc International Development Studies

Utrecht University

Support to Community Management of Water

in Sengerema District, Tanzania

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Msc Thesis
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PREFACE & ACKNOWLEDGEMENTS

Looking back on almost seven years of student life, I can honestly say that the master *International Development Studies (IDS)* at Utrecht University has been the most exciting part of my academic education. I am provided with knowledge of development theories as well as insights in the practices of development cooperation. I am trained in methods and techniques for academic research in a development context and informed on the major themes that are of specific relevance in this field. However, the pinnacle of my master program has certainly been the empirical research that I have conducted abroad.

The field research as well as the thesis have been a truly exciting and enriching experience for me. I have conducted the field research in Sengerema District, Tanzania, between February and May 2010. In academic research a lot is written about community management. Sometimes it is seen as the panacea for provision of public services in rural areas. Other times it turned out to be a complete failure. However, usually community management is considered as a promising model that due to some shortcomings has not yet reached its full potential. Therefore, this research joins the series of academic works that have attempted to understand the dynamics of community management in practice, and that all together came a long way toward unravelling the puzzle of designing rural water supply in a developing country. I truly hope that this research will contribute to improvement of the circumstances of life for the people of Sengerema District.

In writing this thesis I have had the assistance and cooperation of several individuals and organisations. I would like to offer my grateful thanks to all of them.

The IDS staff at Utrecht University has laid a foundation of knowledge, understanding, and skills for conducting research in a development context. Special thanks goes to Annelet Broekhuis, who supervised my thesis writing. Our conversations at the University have certainly contributed to this thesis. Due to Annelet, this thesis has become a valuable contribution to the academic debate on community management.

In Tanzania, SNV Netherlands Development Organization has facilitated the research. Masaka Maganga and Rinus van Klinken in particular have enabled me to understand the concept of community management of water in its local context. It is due to Maganga and Rinus that this research has become of practical value to the stakeholders in water supply in Sengerema District, and that several of its recommendations can be implemented right away.

I owe a lot to (the employees of) the District Water Department of Sengerema, and in particular to Elikalia Edward Malisa, the District Water Engineer. He has provided me with all the support I could wish for. His trust in me and my research has been important, and I am very grateful for that. My research assistant, Roman Tano, has accompanied me on my many travels, and has proven to be a faithful and intelligent young man. I wish him prosperity in everything he does.

In Sengerema Town, my temporary home, I was warmly welcomed by Joseph Simeon Shigulu. Heaven Eugen Masashua, one of my room mates in Sengerema, made that my house in Sengerema very soon felt as my home, and she has taught me so much about local Tanzanian life and culture! One of my dearest memories of Sengerema is the Evangelical Assemblies of God, were I got an amazingly warm welcome and were I met many brothers and sisters, of which I would like to mention Mkanjilwa Mwalingo Watson in particular here.

I would like to thank my fellow interns and IDS-students Dominika, Dominik, Nico, and Job and his wife Arienke and daughter Jet for the pleasant times we had together.

Finally, I would like to thank my parents for their structural and unconditional support throughout all the years of my studies. Their love is of immense value for me.

Above all, I would like to honour my Lord and Saviour Jesus Christ. God provided me with the talents necessary for completing an academic education, and He guided and protected me on my way from Rotterdam to Utrecht to Tanzania and back. I am eternally grateful for His goodness.

Stefan Pals | Rotterdam, May 2011

ABSTRACT

In Tanzania, as in many developing countries, community management has become the predominant model in rural water supply. In community management of water, usually a committee (a Water User Group) consisting of several members of the community bears responsibility for the community's water point Although this model is applauded to by development scholars, practitioners, and developing countries' governments, many researches have demonstrated that it has not yet freed the rural water supply sector from its serious problems. Practice shows that communities are not able to maintain their water points themselves in a sustainable manner. Although underexposed in academic literature, structural post-construction support from another entity turns out to be a prerequisite for sustainable water supply. This qualitative research investigates what kind of support Water User Groups currently receive, it explores what kind of support is needed in order to make their water supply sustainable, and it makes recommendations on how support to Water User Groups can be improved. This research confirms the earlier findings on the necessity of support to Water User Groups for sustainable rural water supply. Besides presenting a *Practical Framework for Sustainability*, this thesis discusses the well-known concepts of cost recovery and ownership. It demonstrates the indispensability of cost-recovery in rural water supply, and provides Water User Groups as well as their supporting entities with a *Model for Financial Sustainability*. This thesis questions the prevalent academic belief that a lack of community's ownership is a main reason for the disappointing results of community management. Instead, it recommends the concepts of 'a community's responsibility' and 'a community's initiative' for further research.

Key words: community management, rural water supply, Water User Groups, ownership, Tanzania

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ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
B/C	Benefit / Cost Ratio
BDS-shop	Business Development Service-shop
CBO	community based organization
CC	(District) Council Chairperson *or* Coordinating Committee
CCM	Chama cha Mapinduzi (Party of the Revolution)
CIA	Central Intelligence Agency
CMT	Council Management Team
COWSO	Community Owned Water Supply Organization
D-by-D	decentralization by devolution
DC	District Commissioner *or* District Council
DCDO	District Community Development Officer
DED	District Executive Director
DfID	United Kingdom Department for International Development
DFLE	District Forum for Local Economy
DHO	District Health Officer
DPLO	District Planning Officer
DWD	District Water Department
DWE	District Water Engineer
DWST	District Water and Sanitation Team
ESA	external support agency
HESAWA	Health through Sanitation and Water
IMF	International Monetary Fund
IOB	Policy and Operations Evaluation Department

IRR	Internal Rate of Return
IWRM	Integrated Water Resources Management
JICA	Japan International Cooperation Agency
KKKT	Kanisa la Kiinjili la Kilutheri Tanzania (Evangelical Lutheran Church in Tanzania)
LED	Local Economic Development
LGA	Local Government Authority
LGRP	Local Government Reform Program
MCC	Millennium Challenge Corporation
MDG	Millennium Development Goal
MKUKUTA	Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania (see NSGRP)
MSMEs	micro, small, and medium enterprises
MWI	Ministry of Water and Irrigation
MWLD	Ministry of Water and Livestock Development
NAWAPO	National Water Policy
NGO	non-governmental organization
NPV	Net Present Value
NRWSSP	National Rural Water Supply and Sanitation Program
NSGRP	National Strategy for Growth and Reduction of Poverty
NWSDS	National Water Sector Development Strategy
OECD-DAC	Organisation for Economic Cooperation and Development - Development Assistance Committee
O&M	operation & maintenance
PCS	post-construction support
PMO-RALG	Prime Minister's Office for Regional Administration and Local Government
PPCP	public-private-community partnership
PPP	public-private partnership

RBM/SIIP	River Basin Management / Smallholder Irrigation Improvement Project
RWD	Regional Water Department
SACCOS	Savings and Credit Cooperatives Societies
SDC	Sengerema District Council
SNV	Netherlands Development Organization
TANESCO	Tanzania Electric Supply Company
TAWASANET	Tanzania Water and Sanitation Network
TCCIA	Tanzania Chamber of Commerce, Industry and Agriculture
TRA	Tanzania Revenue Authority
Tsh	Tanzanian shilling
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VC	Village Chairperson
VEO	Village Executive Officer
VWC	Village Water Committee
WCA	Water Consumer Association
WEDECO	Water and Environment Development Company
WEO	Ward Executive Officer
WRMA	Water Resources Management Act
WRUA	Water Resources Users Association
WSDP	Water Sector Development Program
WSSA	Water Supply and Sanitation Act
WUC	Water User Committee

WUG   Water User Group

EXCHANGE RATE

Currency rate of April 1, 2010   1 EUR = 1999,96 Tsh / 1000 Tsh = 0,50 euro

"Watu hawawezi kuletewa maendeleo, wanaweza kujiletea maendelo wao wenyewe."

"You cannot develop a people – however, a people can develop themselves."

Julius K. Nyerere
- *Baba wa Taifa* -
first president of Tanzania, 1964

1 | INTRODUCTION

In the northern part of Tanzania, East-Africa, there is one district that is surrounded by the Lake Victoria on three sides. Lake Victoria is the largest freshwater lake of Africa, and the second-largest lake in the world. Sengerema District has an average annual rainfall of 962 mm, which is higher than the average annual rainfall of countries like England and the Netherlands. On the basis of these facts, one would not expect this district to suffer from serious water shortages. However, approximately 280.000 people, which is 44% of its population, lack access to clean and safe water.

In Sengerema District, just as in many areas in the developing world, rural water supply is merely organized by means of community management. In community management, the communities are responsible for their own water supply. The community owns the facility, is in control of strategic decision making, participates in operation and maintenance, and shares the costs. In Sengerema District the communities have appointed committees of villagers who carry the responsibility for their water points These committees are called Water User Groups.

Both academic literature and the figures of water supply in Sengerema District give reason to suspect that the Water User Groups are not able to manage the communities' water themselves. Therefore, this research aims

> *to investigate what kind of support Water User Groups currently receive, to explore what kind of support is needed in order to make their water supply sustainable, and to make recommendations on how support to Water User Groups can be improved.*

The research was conducted in Sengerema District, from February to May 2010. It is the researcher's desire that this research will contribute to the improvement of rural water supply in Sengerema District. Therefore, the basis of the research is a rather pragmatic framework, consisting of three fundamental questions:
  – Where are we now? (start)
  – Where do we want to go? (purpose)
  – How do we get there?

The first chapters of the research – the *Thematic Context*, the *Theoretical Framework*, and the *Regional Framework* – will contribute to the understanding of community management of water in a rural development context in general, and of the situation in Sengerema District in particular. They will lay the academic foundation of this research and will serve to place the findings in the proper context. Chapter five, the *Methodology*, will present the research objective and questions, the conceptual model, the methods used, and the limitations of the research. In the subsequent chapter, the *Analysis*, the earlier formulated sub questions of the research will be answered. All three fundamental questions of this research will be addressed in the *Analysis*. In *Conclusions* an answer to the main research question will be formulated. In *Recommendations*, this answer will be translated into practical instructions for the several stakeholders in Sengerema District's rural water supply. At last, in the *Contribution to the Academic Debate*, the findings for one specific region in Tanzania will be placed in the global academic framework of community management and the provision of basic services in a rural development context.

Before turning the page to the *Thematic Context*, a little introduction is provided by a former President of the International Water Resources Association, prof. Biswas.

> *Solutions to water problems depend not only on water availability, but also on many other factors, among which are the processes through which water is managed, competence and capacities of the institutions that manage them, prevailing socio-political conditions that dictate water planning, development and management processes and practices, appropriateness and implementation statuses of the existing legal frameworks, availability of investment funds, social and environmental conditions of the countries concerned, levels of available and usable technology, national, regional and international perceptions, modes of governance including issues like political interferences, transparency, corruption, etc., educational and development conditions, and status, quality and relevance of research that are being conducted on the national, sub national and local water problems (Biswas, 2004).*

2 | THEMATIC CONTEXT

This research attempts to understand and improve the water supply of a particular rural area in Tanzania. In order to understand the local situation there, it is necessary to learn more about the global context of water supply. This chapter is an introductory one, in which topics like the importance of water for life, current global figures on water, water as a topic in development cooperation, and the debate on water as a basic right or an economic good, will be addressed. Several of the topics will be discussed more in-depth or with a specific regional focus in the chapters *3 | Theoretical Framework* and *4 | Regional Context*.

2.1 | The relevance of water

Water is crucial to many aspects of human life, as well as to the earth's ecosystems (Vo, 2007). The provision of safe domestic water is seen as a basic service that is essential to life. Without access to safe water, vulnerable communities are trapped in the stranglehold of disease and poverty (World Pumps, 2006). Water plays – both directly and indirectly - an important role in the achievement of the Millennium Development Goals (MDGs). For goal number 1 (eradicate extreme hunger and poverty) as well as goal number 7 (ensure environmental sustainability) the improvement of water management is crucial (O'Meally, 2009).

Inadequate water and sanitation are seen as a major cause of the growing disparity between the rich and the poor (Kyessi, 2005). This a logical consequence of the fact that there is a relation between the availability of water and socio-economic development. In case water is available in close proximity to the home, families have more time for more productive pursuits (MWI, 2009; IOB, 2007). When, as a result, the economic situation improves, more people are able to pay for their water, which will lead to new and better facilities. The access to education of in particular girls is hindered by the fact that they have to walk long distances to fetch water (MWI 2009).

Currently, half of the world's hospital beds are used by people who became sick as a result of contaminated water (Rozemeijer, 2010). Water is very much related to health. Inadequate and/or contaminated water and sanitation are the primary cause of diseases such as cholera, malaria, schistosomiasis, dysentery, diarrhoea, scabies, dengue fever and infectious hepatitis (Kyessi, 2005; Vo, 2007; IOB, 2007). More than three million people die yearly as a consequence of these diseases (Kyessi, 2005). Improvement of water supply results in improvements in health (IOB, 2007). Clean water will reduce the drugs bill and directly increase individual productivity (MWI, 2009).

Concluding, water has proven to be relevant if not essential for human life, socio-economic development, human health, and the earth's ecosystems. With this in mind, it is interesting to investigate the current availability and accessibility of water.

2.2 | Worldwide figures of water

Immediately apparent is the shocking number of one billion people in the world who have no access to safe and clean drinking water in 2010 (Rozemeijer, 2010). However, several scholars (Lomborg, 2001; Khurana, 2001) argue that the world has enough water. They claim that there is no water scarcity, but only water mismanagement. Problems of water shortage in the Third World are due to lack of investments (Vo, 2007). On a first glance, that is not a very strange idea, when one takes into account that 70% of the planet's surface is covered with water. Of this 70%, however, a vast majority is salt water. Besides, a lot of water is located in polar ice, in snow, or far from human habitats. Of the earth's total water volume of 1.4 billion km³, only 2.5% - 35 million km³ – is fresh water. Of this 35 million km³, only 1% - which is 0,025% of the total amount of water on the planet – is accessible for human consumption. The fresh water that is accessible for human consumption is not divided equally among the continents and the countries. Instead, water availability differs greatly from one region to another, as well as from one season to another and from one year to another (Vo, 2007; Biswas, 2004; Phillips, 2007). It has to be concluded that water is a finite resource (Vo, 2007).

Despite this fact, the use of water is increasing as a result of global population growth and increasing demands in agriculture, industry, energy and transport (Vo, 2007). In the last century, the world's population has increased by a factor of four. The global water use has increased by a factor of nine (Vo, 2007).

The global water use is not equally divided among the current 6.91 billion people living on planet earth. Forty-one percent of the world's population lives in regions that belong to the categories 'area with water stress' or 'area with water scarcity'. In particular in many developing countries, millions of people cannot make use of proper water facilities (Phillips, 2007). As this research took place in a rural area in Tanzania, it is interesting to know that ninety percent of the people that lack access to safe water reside in rural areas. Thirty percent of rural populations in developing countries fetch their water from rivers, dug pits, and other unsafe sources, which results in the fact that ninety percent of human infections in developing countries are caused by water-borne diseases (Phillips, 2007).

2.3 | Shifting paradigms in development cooperation

The devastating impact that a lack of water has on socio-economic development, human health, and in the end even human survival, makes that water is a prominent topic in development assistance for many years. In Sengerema District, where some of the water supply systems have reached the age of forty, is clearly visible that international donors have water high on the agenda for decades. In the current development cooperation in a country like Tanzania, Non-Governmental Organizations (NGOs) and Community Based Organizations (CBOs) play an important role. There is special attention for the role of the private sector, in particular in the form of Public-Private Partnerships (PPPs). At the same time, the government shifts its role from the main provider of water to a facilitator of the water sector. These developments for sure have an influence on the water supply in Sengerema District, as well as on the findings, conclusions and recommendations of this research. In the same way, the former paradigms in academic thinking on development, together with historical events and developments in the water sector, have had their influence on development cooperation in the past. However, what not should be underestimated, is the influence of the former paradigms of international development studies on today's assumptions and beliefs. Yesterday's failure is the basis for today's lesson and for tomorrow's action plan. For that reason, the paradigms in the academic view on development cooperation, in particular in the water sector, will be discussed in this section. The sub sections *3.2.4 | History of community management* and *4.3.1 | History of the water sector in Tanzania* will provide a history of more specific subjects, respectively the development of the theory on community management and the major developments in Tanzania's water sector since independence.

In reality historical processes cannot be split in blocks of exactly ten years. However, the history of international development is often, for the reasons of convenience and a clear overview, divided into decades.

Although development projects were already undertaken in colonial times, studies on international development came into existence in the fifties of the previous century. This decade is considered as the decade of modernization, in which development was largely seen in technical terms. It was widely recognized that the right preconditions for growth would automatically result in economic development. In the water sector, the provision of safe and clean water had to lead to health improvements. The focus was on (technical facilities that were necessary for) production of water (Seppala, 2002). Tanzania was not yet independent in the

Figure A: Buzilasoga Dam, Sengerema District, constructed in colonial times.

3

1950s, and water cooperatives were run and owned by the consumers themselves. The role of the government was limited to the provision of equipment and professional advice. However, the consumers were the responsible owners of the systems, and they maintained them (Mashauri and Katko, 1993). Very interesting is that this original organization of the water sector appears to have many similarities with the current design of community management!

A proliferation of the ideas of modernization resulted in even more focus on the technical aspects of water production. As a result of Dependencia-theory, in particular Latin American countries set up large water schemes that were free or heavily subsidized. Planners in developing countries sought to rapidly emulate the service delivery mechanisms of the developed countries. In literature, this is referred to as 'skipping straight to Weber'[1]. Standardized top-down programs, managed by a centralized civil service bureaucracy, were the result. It soon became apparent that this approach, that was still predominant in the 1970s, failed early and often in virtually all sectors. In these years, development aid consisted of money and technical assistance that were directly given to the national governments and the ministries concerned (Pritchett and Woolcock, 2002; Van Rooij, 2009; De Jong, 2006; Huisman, 2006). In Tanzania, one of the political parties promised already before gaining independence that water would be supplied as a free basic service in the rural areas. Keeping this promise became a heavy burden for Tanzania's government. As from 1965, all water supply investments were financed by the government. Then from 1970, the government covered the operation and maintenance costs as well. The government had to provide trained personnel to run the schemes, funds to operate and maintain the projects, and funds to start new ones (Mashauri and Katko, 1993).

International assistance concerning the issue of water supply and sanitation started on a large scale in the 1970s. The focus was broadened in the direction of rural water supply. Besides the still enduring focus on technology, little more emphasis on the social aspects of water evolved. Participatory methodologies such as community management were developed from this decade onwards (Bergh, 2007; Darcy, 2002). It became more common to consider water as a social good[2] (Van Rooij, 2009; Seppala, 2002). Criticism against Tanzania's free water policy was introduced in the 1970s. The burden on the government's budget was overwhelming, and water systems became non-functional after a little while. Critics blamed the government for its wishful thinking, but also mentioned the more principal argument that the provision of free water is contrary to the government's role of mobilizing and teaching the people about self-help and self-reliance. In 1971, professionals and intellectuals argued that people should pay for their water, but the government of Tanzania disagreed. The result was stagnation in the country's water supply development. Many of the projects depended on foreign funding. At one point, more than half of the water supply sector's requirements were covered by foreign funds. The local governments tried to spread the money they received from the central government in Dar es Salaam, which resulted in the start of many new projects. Unfortunately, many of these projects were never completed.

At that time, several causes for an inappropriate water sector were mentioned:
- lack of financial resources
- unqualified technical personnel
- lack of operational equipment and transport facilities
- an inoperative institutional system
- inappropriate data retrieval system
- incompatible technologies
- poor operation an maintenance procedures
- unmotivated staff (Mashauri and Katko, 1993).

Many of the above mentioned problems are thirty years later still considered as the major constraints for a flourishing water sector.

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1 Max Weber is seen as the inventor of public sector bureaucracies. According to many scholars, the final solution for provision of a key service such as safe and clean water is an 'effective, rules based, meritocratic, and politically accountable public agency' (Pritchett and Woolcock, 2002).

2 More on the discussion on water as a social or an economic good can be found in section *2.4 | Water: basic right or economic good?.*

In the water sector of that time, Tanzania's aid-dependency became clearly visible. Over 80% of total investments in the sector came from External Support Agencies (ESAs); in the large projects that are supported by bilateral donors this was often even more, between 85% and 95% of the total budget. The international donors usually gave grant aid in support of the government's free water policy. It took more than two decades before it became clear for these international agencies that this kind of support was not sustainable (Mashauri and Katko, 1993).

At the 1977 United Nations Conference in Mar del Plata, Argentina, the 1980s were marked as 'the International Drinking Water Supply and Sanitation Decade'. As a result, water supply as part of development aid gained a lot of attention in this era and the support grew substantially (Bhandari and Grant, 2007; Seppala, 2002; Vo, 2007). However, it became widely recognized among sector professionals that many rural water supply programs in developing countries were performing poorly. The problems:

- Systems were not being repaired and were falling into disuse.
- Cost recovery was minimal; revenues were often insufficient to pay for even operation and maintenance, much less capital costs.
- Communities did not have a sense of ownership in their water projects.
- Households were not satisfied with the projects that donors and national governments installed.

Within the water resources profession, a huge discussion ensued about the reasons why success in the rural water supply sector was so difficult to achieve. According to engineers, the constructions were of poor quality, anthropologists blamed a lack of community participation, political scientists described the poor governance structures and rent-seeking, and economists reported poor pricing and tariff design. After civil service reforms yielded disappointing results, some of the current approaches in the water sector were invented. As a possible solution for the here-above mentioned problems, community participation in the projects gained increasing attention (Pritchett and Woolcock, 2002). New paradigms made their entrance into the field of development studies: human development and anti-development. These new paradigms drove the existing focus on technology to the background, in order to make place for a more holistic and participatory view on water supply. As a result, water policies became increasingly participatory and holistic, and the bottom-up perspective gained favour at the expense of the till then prevailing supply-driven programs. After the increasing attention for rural water supply in the 1970s, now also the specific challenges of peri-urban areas were acknowledged. As a response to the in the 1970s upcoming vision of water as a social good, in the 1980s water was more and more considered to be an economic good[3] (Van Rooij, 2009; Whittington et al., 2008). Concerning the free water policy in Tanzania, the 1980s were a turning point. In 1980, the then principal secretary of water stated that "people's participation in water supply projects is important for sustainability of the sector". In 1982, even President Julius K. Nyerere stated that:

"Whatever the technique used, for building water supplies, it must be adopted in consultation with the local people, and from the beginning the responsibility for looking after the facilities must clearly be theirs. The government cannot finance the maintenance and repair work of basic village equipment if new developments are to go ahead".

In 1987, Minister of Water Ng'wandu complemented the earlier statements by telling the people that "the truth is the Government can no longer afford the provision of water" (Mashauri and Katko, 1993).

Two very important and leading events in the 1990s were the International Conference on Water and the Environment in Dublin and the Earth Summit in Rio de Janeiro. At the first one, four guiding principles were formulated which are seen as the summary of the international consensus on water:

1. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
3. Women play a central part in the provision, management and safeguarding of water.
4. Water has an economic value in all its competing uses and should be recognized as an economic good (Vo, 2007).

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3   More on the discussion on water as a social or an economic good can be found in sub-section *2.4 | Water: basic right or economic good?*

A critical remark that has to be made on this, is that the international donor community had a very large influence on these guiding principles. Therefore, they might rather reflect the general development paradigm of that period than the vision and strategies of the recipient countries. At the same time, the policies on water supply and sanitation of many developing countries seemed good on paper, but the actions plans included were often impractical and unrealistic. The consequence was that the policies were not effectively implemented (Seppala, 2002). In contrast to early development assistance in water and sanitation – which was fragmented and project-based, with little exchange of information among agencies and between countries – in the 1990s developing countries and international donors paid much more attention to effective participation of all stakeholders. Global strategies were the result. External Support Agencies (ESAs) focused on capacity building and policy support (Seppala, 2002; Huisman, 2006). A trend in the 1990s was a reduction of the investments in rural and peri-urban areas. In Tanzania, at the beginning of the 1990s, the free water policy was officially abandoned, and a Water Policy that introduced cost sharing between government and consumers was accepted by the Parliament (Mashauri and Katko, 1993).

In the new millennium, there is a larger role for NGOs and CBOs, as well as for public-private partnerships. As part of the institutional approach, the role of governments changed from suppliers of water to facilitators of the water sector (De Jong, 2006). Although this shift was presented with beautiful sentences in glossy development reports, in some cases it was mainly the result of a government unable to secure safe water for its inhabitants. In the 2000s, water and sanitation are seen as basic human rights, and both privatization as well as community ownership and management become popular (Van Rooij, 2009). Safe water supply is emphasized in the Millennium Development Goals. One of the goals is to halve the proportion of the world's population without safe drinking water by 2015 (Vo, 2007). In Tanzania, in 2002 the new National Water Policy was published. In this policy, most of the above mentioned changes were stated. The National Water Policy announced the by the Tanzanian government adopted strategy to shift from water provider to water sector facilitator. Community management, including legal ownership of their water facilities, became the predominant management model in the rural areas. Furthermore, private parties were encouraged to invest in the water sector (MWLD, 2002). The National Water Policy also displayed the view of the Tanzanian government on the principal debate on water, namely if water is considered a basic right or an economic good. Developments in this discussion in the past decades have been mentioned several times in this section. This principal discussion is important, because the side the government or an NGO chooses has significant influences on its vision on water supply and its development policies. Therefore, one sub-section is devoted to this principal debate. In that section, some of the main arguments, as well as the position of the Tanzanian government, are discussed.

2.4 | Water: basic right or economic good?

In the debate on water of the past years, two different schools can be recognized. One group of scholars considers water to be an economic good; the other group argues that all human beings have a right to water.

Although in the Universal Declaration of Human Rights from 1948 is mentioned that everybody has the "right to a standard of living adequate for the health and well-being of himself and of his family" (UN, 1948), it lasted until 2002 before water was recognized as an independent right itself (UN, 2003). Because clean water depends on a source that is sometimes scarce, the United Nations Committee on Economic, Social and Cultural Rights declares that it is "embodied in the principle of progressive realization" (UN, 2003). According to the group of scholars that considers water to be a right, fresh water is a legal entitlement, and not just a commodity or service that is provided on a charitable basis. Therefore, states have a duty to work towards realizing the right of fresh water for all people as fast and as effectively as possible (Allen et al., 2006). The government is the entity responsible for the provision of this common good.

Partly because the harsh reality of the developing world has shown that governments are often not able to meet this obligation, and partly because they believe that the market is best suited for finding an equilibrium between demand and supply, some classic economists argue that water is an economic good. They consider private companies best able to manage the world's water supplies. Important in their argument is the statement that pricing of water will prevent overconsumption of water. Water for free, on

the contrary, would lead to irresponsible overconsumption of a scarce good and would only exaggerate the problems on the long term (Van Rooij, 2009).

This debate is not only relevant for academic scholars in developed countries, it has direct consequences for governments' policies in the countries that struggle with scarcity or inaccessibility of clean water. In Tanzania's National Water Policy, attention is given to the debate as well. The National Water Policy declares as a principle of rural water supply that:

> **Water is a basic need and right**
> Recognizing that access to clean and safe water is a basic need and right for all human beings, efficient management and equitable use of water in the rural areas will be promoted (MWLD, 2002).

Although Tanzania's government acknowledges that water is a basic need and right, it makes no promises concerning free water for all, as it used to do in the past. Instead thereof, among the prerequisites for sustainability is mentioned:

> (iii) Ensuring full cost-recovery for operation and maintenance, and replacement (MWLD, 2002)

In conversations with Water User Groups, the point of view of the Tanzanian government can be made understandable as follows: the water under the ground is for free; you only have to pay for the service of pumping water in your bucket.

3 | THEORETICAL FRAMEWORK

After drawing the general context of this research in the previous chapter it is necessary to become a bit more familiar with the academic theory that serves as a foundation under this research. The scientific context that is set out in this chapter is essential reading material before one can fully understand the relevance of the research.

Theory on community management can be seen as the major theory this thesis builds on, although the researcher will not hesitate to borrow from other, sometimes adjacent academic fields. In this thesis community management of water is considered as one specific form of the older concept of participatory development, which will be discussed first in this chapter. After that, all attention will be given to community management of water. A description of the concept will be provided, as well as background information on Water User Groups, a history of community management, and the advantages and disadvantages of the model. Three of the major concepts in this research – ownership, post-construction support (PCS), and sustainability – will be discussed separately. The chapter concludes with the recent major developments in theory on community management that are of relevance for this research.

3.1 | Participatory development

As community management is considered to be a model that came into existence in the fertile ground of academic theory on participatory development, the latter will be discussed here first. Campbell and Vainio-Mattila concluded in their paper on participatory development and community-based conservation that there is no one definition for participatory development. An important commonality in the different definitions is that either 'the people' or 'the community' shift from a passive voice to an active voice in their development (Campbell and Vainio-Mattila, 2003). This is clearly visible in Appiah's definition of participation. He defines it as "the empowerment of the people to effectively involve themselves in developing programmes that serve the interest of all as well as to effectively contribute to the development process and share equitably in its benefits" (Appiah, 2001). The World Health Organization formulates participation as "a process by which people are enabled to become actively and genuinely involved in defining the issues of concern to them, in making decisions about factors that affect their lives, in formulating and implementing policies, in planning, developing and delivering services and in taking action to achieve change" (Kawa and Makundi, 2007). In participatory approaches, project funding or capacity building investments are channelled directly to communities. According to (Mansuri and Rao, 2004), 'participation' is the active involvement of members of a community in at least some aspects of project design and implementation. A key objective of participation is the incorporation of local knowledge into the decision-making processes of the project (Bergh, 2007).

Over time, two distinct approaches to participatory development have evolved, both adhered by different stakeholders in the development sector. The functional view on participatory development considers that people's participation is a methodology, a means to the end of sustainable development. Partisans of this view apply community management in the expectation that it will lead to more effective projects. The transformative view, in contrast, holds that strengthening people's ability to determine how to improve their economic and social conditions is not just an effective methodology, but the true essence of development (Bergh, 2007). Typical for this view is the statement of Amartya Sen, that "the need for popular participation is not just sanctimonious rubbish. Indeed, the idea of development cannot be disassociated from it" (Sen, 1999). As a result of a difference in view, the approaches make use of different forms of participation. In the table below, the different forms are ranged from the most passive form of participation to forms in which communities are involved highly or even own the process of development.

Table I: Different forms of participation in development

View	Name	Description
Functional view	Passive participation	Community is told what is going to happen
Functional view	Information giving	Attempts are done to make sure that the people are informed well
Functional view	Consultation	Without having a say in the decision-making
Functional view	Participation for material incentives	Labour as a prerequisite for the implementation of the project, or in exchange for food, cash, or other material incentives
Functional view	Functional participation / participatory implementation	To meet predetermined objectives, the major decisions have been made before
Transformative view	Interactive / deliberative participation	Joint analysis, such as Participatory Action Research. Action plans are designed and local institutions are strengthened or formed. These local institutions take control over local decisions
Transformative view	Self-mobilization / transformative participation / effective participation	Community takes initiatives independently of external institutions. Even if the community receives resources from an external entity, the community decides how to use these resources.

Based on Bergh, 2007

In many cases, participatory rural development projects are not more than one of the more passive forms of participation. Contribution of labour by the beneficiaries and collection of the community's requests without any guarantee that their recommendations will be taken into account, happens often. As a result of this functional approach, the beneficiaries often consider the constitution of a user committee as a purely administrative formality, instead of a means to take ownership of their own development process (Bergh, 2007). Part of the transformative viewpoint is the promotion of more formal community organizations, in order to achieve that user committees are not just a formality. In this way, the beneficiaries and participants are transformed into institutionalized partners and official stakeholders in the project. These organizations are commonly referred to as Community Based Organizations (CBOs) (Bergh, 2007).

As the general characteristics of participatory development are discussed, it is time for a more in-depth investigation in the more specific concept of community management of water.

3.2 | Community management of water

In order to understand what is meant by the term 'community management of water', this paragraph consists of some definitions, a description of the concept in practice, information on the terminology used, specific explanations on the Water User Groups, and an overview of the historical development of community management. It concludes with the advantages and disadvantages that were experienced in places were community management was implemented.

3.2.1 | Definitions and description

The best opening of this section might be the provision of one of the most complete definitions of community management:

> Community management: The management model in which communities themselves are in control of strategic decision making about their service provision. Key principles of community management are: community participation, community control, community ownership and cost sharing by the community (Smits, 2005).

In community management of water, most commonly a community managed organization[4] is formed and empowered to operate and administer the community's water supply system. These organizations are usually characterized by a small-size, flat organization structure and flexible job specifications (Darcy, 2002). Recent research showed that linking the structures of community management to already existing structures within the community could improve effectiveness (Lockwood, 2002). However, "exactly how these communities are defined, the manner in which they 'manage', the extent to which the organizations focus on, or incorporate, social action or community development, become points of diversion and debate in understandings" (Nyland in: Darcy 2002).

The method of community management to manage a certain livelihood source is used in several fields, such as the management of semi-arid rangelands (Verdoodt et al, 2009), community forests (Van Laerhoven, 2010), fisheries (Ratner, 2006; Sultana and Abeyasekera. 2008), irrigation management (Marquardt and Russell, 2007; Mosse, 1999), watershed management (Kerr, 2007), and even an internet cafe (Simpson et al, 2003). Community management is not only a development tool for underdeveloped countries; it is practised in both developed and underdeveloped countries, all over the world. Australia is a good example of a developed country in which community management has wide currency (Darcy, 2002). Darcy adds that an important feature of community management is the fact that the different needs of different localities and specific population groups such as women, young people, or disabled people, can be addressed appropriately. This use of local knowledge and personal experience in community management stands in clear contrast to the broadly based, rational planning, expertise and detached professionalism that is the ideal of bureaucracy (Darcy, 2002).

Community participation is an active two-way process: it can be initiated and sustained by authorities and formal organizations as well as by local citizens and communities themselves (Kawa and Makundi, 2007). Often, community projects are implemented by autonomous structures such as NGOs or international donors. In many cases the (local) government administration is bypassed. The advantage of these structures outside of the government administration is the quick disbursement of funds to the local level, without corruption and delay (Bergh, 2007). Nyland concludes that the emergence of community management was primarily a reaction against large-scale, dehumanizing bureaucracy, and that its success as a mode of service delivery "is predicated on its autonomy" which, she argues, is "simply incompatible with a control by external bodies such as the State". This autonomy diminishes as dependence on single external funding sources increases. According to some critics, the ideal of 'community' has now been colonised by dominant bureaucratic discourses of the state and large international organizations (Darcy, 2002).

3.2.2 | Terminology

Community management of water is common in Latin America, Asia and Africa; it is encouraged and implemented by international NGOs, development workers from many 'developed' countries' governments, and local NGOs; it is elaborated in successive official national water policies in different decades. Therefore, it is not surprising that different terms for similar but not identical entities have been developed. This theoretical framework is drawn from literature of scholars from different decades who carried out research in different continents. This is of course enriching, but the different terminology used might sometimes be a

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4   These community managed organizations have different names in different regions and in different times. Terms that are used often, and some explanation about the different terms, can be found in sub-section *3.2.2 | Terminology*.

bit confusing. The terms that are used in the literature - Village Water Committee (VWC), Water User Committee (WUC), Water Consumer Association (WCA), Water User Group (WUG), Water Resources Users Association (WRUA) and Community Owned Water Supply Organization (COWSO) – all have to do with community management, but are not exactly the same. All these terms are, unless otherwise stated, in this research translated into the term Water User Group. Water User Group is the current term for community-based entities that are responsible for the water supply in a village or sub-village in Tanzania (MWLD, 2002; Lagat and Rono, 2010; MWI, 2009).

3.2.3 | Water User Groups

> Community-driven development is a misnomer of sorts. Communities do not (and should not) drive development projects in some loose and amorphous way. Rather it is community *organizations* that take a lead role in planning, managing and interacting with local governments (Krishna, 2004).

These community organizations – called Water User Groups (WUGs) - do rarely evolve naturally, so they are often constructed by outside actors. Sometimes the instalment of a WUG is induced, as part of the conditions that communities must fulfil in order to participate in a project. Water User Groups can vary in their degree of formality. This depends on their legal status, formally stated rights and responsibilities, and the presence or absence of a legally binding governance structure for recruiting members, selecting leaders, and conducting affairs (Krishna, 2004).

Water User Groups are elected or appointed in different ways. In some contexts it is a really democratic process, in others there is a lot of government interference. Research has shown that, whether it is the one or the other, Water User Groups are not necessarily pro-poor. When there are democratic elections, the Water User Groups will normally be formed by the high- and mid-class villagers that can both express themselves and win the support of the majority of the community. When there is government interference, it can happen that four out of six members are councillors, or all committee members are political party members as well, or the chairman of the committee is the brother of the municipal council's president. Sometimes, the members of the Water User Group are businessmen and shopkeepers who have a business interest in construction or maintenance of the facilities. Conclusively, it can be questioned if handing over the responsibility for the water supply facilities to the communities themselves will benefit the poorest of the poor (Sokile et al., 2003; Bergh, 2007).

On behalf of the community, Water User Groups are supposed to be involved in the preparation of the technical studies; to participate financially and/or by providing labour in the construction of the infrastructure; to manage and maintain the facilities; to oversee the distribution of the water to the users; to define and apply the by-laws governing the use of the facilities; and lastly, the committee is in charge of the administrative and financial management of the Water User Group[5] (Bergh, 2007).

3.2.4 | History of community management

Community management of water is the leading paradigm in rural water supply since the 1990s. The current model, as described above, was not masterminded in a development scholar's office, but it developed gradually as a result of trial and error in the field. It is influenced by the developments in other sectors, such as community management of other resources, and general rural development (Lockwood, 2004). Learning from this history, including its trials and errors, is important in order to avoid the pitfalls that has been stepped in in the past. Therefore, a concise overview of the history of community management is provided here.

After independence, the government took responsibility for many parts of Tanzanian life. The extension of government presence into the country side led to the irreversible destruction of the farmer's initiative. Imported frameworks and procedures, foreign to local habits, were established. As a result, the peasantry came to feel relieved of any initiative or responsibility. From that moment on, the farmers referred all their problems and needs to the government administration (Bergh, 2007). In the 1970s and 1980s, social

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5   More information on the Water User Groups in Sengerema District can be found in *4.5.1 | Water User Groups*.

anthropologists and sociologists became enthusiastic for the concept 'community'. By proponents, community management was seen as the panacea for the problems of impersonal bureaucracy (Darcy, 2002). In the 1990s, professionals reached consensus on the desirability of more attention for the demand-side during the pre-project planning procedures in rural water supply programs. However, the variety of the unusual alliances and antagonisms proposed was wide (Pritchett and Woolcock, 2002). A demand-driven process of project planning should contain specific attention for the involvement of households, the role of women in decision-making and the requirement of households to pay for their water services.

Table II: Components of a demand-driven process of project planning

Involvement of households
Households should be involved in the choice of both technology and institutional and governance arrangements. This was necessary to ensure that the engineering designs were responsive to local needs and realities (Whittington et al., 2008).
Role of women
The role for women in decision-making should be larger than historically has been the norm. In rural areas of the developing world, women are traditionally the managers of water. They are the main users of water in, for example, vegetable gardening, animal husbandry and brewing activities (Akuoko-Asibey, 1996).
Requirement of households to pay for water services
Households should pay for all the operation and maintenance costs and at least some of the capital costs. The user fees that are paid by the community once the system is up and running should cover the costs of operation and maintenance. Hereby is the dependence of the community on higher levels of government minimized. The requirement to pay at least a part of the capital costs is a good 'demand filter'; the idea behind is that this entry amount would be a barrier for constructing water systems in communities were the need for these systems is not so high. The payments for both the operation and maintenance, and the capital is considered to foster a sense of community ownership of the system, which on its turn would contribute to a higher commitment to use and maintain the facilities. Much of the human resource costs of managing rural water projects should be transferred to the committee that is responsible for water in the village (Whittington et al., 2008; Bhandari and Grant, 2007).

Although scholars reached consensus on the components of a demand-driven rural water supply program, it was not yet clear if all components were indispensable, and if some were more important than others. However, there was an implicit assumption among professionals that as long as these three components were implemented and spare parts would be available, the community would be able to manage its water facilities without further interference from government or NGOs. As from the mid-1990s, several donors, in cooperation with national and regional water resources ministries, have designed and implemented rural water supply programs which were based on, and contained at least one of the components, of the demand-driven community management model (Van Rooij, 2009; Whittington et al., 2008).

Post-construction support (PCS) of communities managing their own water supply was not yet considered a necessity in the nineties. However, in the new millennium, some have argued that it is not realistic to expect from local communities that they are able to manage their water supply systems independently. Some post-construction support, such as follow-up training and technical assistance visits by engineers, is considered to be necessary in order to preserve sustainability of the systems[6] (Whittington et al., 2008). In the late 1990s and the zeroes, community management came in the picture as an alternative for privatization. Anti-water privatization advocates were campaigning for 'community' water and tried to place water firmly in the public sphere. In the battle against privatization of water, the ideology of the 'community' plays an important role. While Private Sector Participation contracts flourished during the 1990s, by the mid-2000s it became clear that privatization initiatives failed to achieve development objectives. Private water companies were not able or not willing to extend water supply to poor households, hoped-for levels of private investment were not reached, and large private water multinationals started to retreat from certain

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6   More information on post-construction support can be found in sub section *3.3.2 | Post-construction support*.

types of contracts and large regions in the world. Community management, which was forced a bit to the background of the development debate, was brought in again as the solution for the problem of water supply in the developing world. A newly introduced idea was the Public-Private-Community Partnership (PPCP), but development scholars also mentioned community 'business partnerships', and an increased reliance on the informal private sector as options to combine the advantages of the private sector with the advantages of community management (Bakker, 2008).

In the past years, community management has been the predominant model in rural water supply in developing countries. However, where there have been times that community management was considered the panacea for the lagging rural areas in developing countries, nowadays scholars and practitioners have acknowledged that community management has its shortcomings and constraints as well. These shortcomings and constraints, together with the advantages of community management, will be presented in the next paragraph.

3.2.5 | Advantages and disadvantages of community management

Community participation contributes to the achievement of all five central development objectives of increased efficiency, sustainability, accountability, equity, and democracy.

The specific advantages can be summed up as follows:
— Increased empowerment; services run by people with local knowledge and a high level of commitment
— Improved responsiveness to citizen demands and priorities; more personalized services
— More cost-effective and timely service delivery
— Better targeting of benefits will lead to more equitably distributed project benefits
— Less corruption and other rent-seeking activity
— Control of decisions and resources can enable communities to build social capital by extending the depth, range, and effectiveness of their social networks (Bergh, 2007; Darcy, 2002)

The potential shortcomings and disadvantages include:
— The concept of 'community' is often romanticized by development scholars as coherent, relatively equitable social structures. However, inequitable power relations and resource allocation does exist within communities, just as everywhere else, and might lead to different problems:
  — The risk of capture of power and resources by elites
  — Entrenchment of barriers to transparency and accountability by rent-seeking community leaders
  — Appropriation of benefits by majorities in ways that perpetuate inequality and imperil responsiveness to the needs of marginalized groups
— Coordination and coherency problems, because of the many different methods and procedures that are used in community management projects. This is a result of local experimentation by national governments and donors
  — Addressing these problems carries the risk of excessive standardization and bureaucratization, and as a result a loss in demand responsiveness.
— Difficulties with achieving economies of scale
— Difficulties with resolving problems of territorial scope
— Lack of strategic perspective on local development, in particular related to economic opportunities and upstream linkages
— Current emphasis of linking community management to development plans and funding may lead to a disincentive for communities to undertake collective action to resolve local problems independent of (donor or government) funding
  — In that case all effort has been for nothing. The poor would be dependent on outside actors just as in the earlier top-down strategies.
— A growing literature presents evidence that participatory methods often obstruct the potential

- benefits of democratic decentralization when they are used to establish a plethora of local institutions such as CBOs, village development committees, and user committees. The creation of user committees may even fragment popular political participation.
- Direct (financial) support (e.g. World Bank) to CBOs frequently result in de creation of structures outside of local government. When responsibilities are removed from the local government, than the capacity of local government to support sustainable service delivery in the future might be influenced negatively.
- The main constraint to participatory project planning is time: the normal project cycles of four to five years are not enough to ensure the necessary amount of interaction, trust, and knowledge of the local communities to plan and implement sustainable projects.
- Government bureaucracies providing funds to small, locality-based organizations, which then provide and manage a variety of social welfare services, might lead to:
  - implicit tokenism, and difficulties with managing small and poorly resourced organizations with unpaid volunteers
  - a broader political economy of 'localism' as a strategy to distract attention from broader social and structural conflicts of interest, which will forestall the possibility of real social change.
- A difficulty with implementing true community management is the fact that projects often resort to contractors. This makes it difficult to integrate the 'participants', and the contracting companies feel obliged to take on the works that were supposed to be carried out by the population in order to avoid problems of quality and time delays. Contracting out also means giving less responsibility to the populations, and results in a lack of 'ownership' of the project on their part, with all the negative implications in terms of sustainability (Bergh, 2007; Bakker, 2008; Darcy, 2002).

On the basis of their experiences with the here above mentioned advantages and disadvantages, many scholars and practitioners have formed their opinion on the topic. Their lines of reasoning, their weighing of pros and cons, their background information and their critical notes will be helpful in forming a mature opinion on the concept of community management of water.

Development workers are positive about the community management for the simple reason that they see that 'it works'. Anti-globalists are pro communities because they appear to be so local and unique; their support might be more of an anti-reaction to globalization than that it is really pro-community management. Others might favour community management out of an ideology, perceiving that it is about people working together, helping each other, sharing both resources and responsibilities. It can be concluded that different people from different backgrounds have different reasons for promoting the concept of community management.

In many countries, 'public' services are limited to the elite. Exclusion is integral to the process of modernization in developing countries. Governments lack the resources that are needed for universal provision of basic services to their citizens (Bakker, 2008). Community management is seen as a reaction on exclusion: people from the grassroots take up the responsibility for their own lives and destiny. It appears to be the panacea that results in development of 'water for all' without waiting for development of the government services. Many development scholars were enthusiastic about the emerging concept of community management, because it is close to the people, it prevents corruption and avoids the annoying government bureaucracy. Often community management is written about in terms of 'bringing the responsibility back to the people' and those writers make it sound as if with a shift towards community management old structures are re-established. However, in his essay Colonial and Contemporary Ideologies of 'Community Management', David Mosse is critical on this viewpoint and suggests that "today's development agencies also selectively endorse particular social theories in constructing a rural society which is manageable in terms of present policy goals and administrative constraints". This tendency is not new, but stretches back to the colonial times. The striking similarity between the colonial rulers and the current development agencies is that they conceive of rural society in terms which are appropriate to given program and administrative systems (Mosse, 1999).

The mainstreaming of participatory approaches such as community management has made it an ideal

instrument for the promotion of pragmatic policy interests. Many governments look to participation from the functional viewpoint. To them, community management is more about low-cost maintenance and cost-effective delivery than about radical social transformation of their rural population (Bergh, 2007). Current rural development theory is shaped by the idea that communities, provided that they are given unambiguous and secure rights of access and use, are better managers of the natural resources they need for their livelihoods than are state bureaucracies. Governments have proven in many cases to be incapable to prevent non-private natural resources from degradation. As a result, in many sectors the state machinery has transferred resource management responsibilities to the local people (Mosse, 1999). For many people, community management feels like re-establishing the traditional structures. They tend to perceive history as if before the rule of colonial powers and state bureaucracies everything was well organized by means of traditional institutional arrangements. The dissolution of this traditional community institutions of resource management is seen as the source of the present environmental degradation, and the governments are blamed for that. The line of reasoning is very simple. In the beginning, there were traditional community institutions which managed the natural resources in a sustainable way. After that colonial powers centralized rule over and management of these resources, and since that shift these resources have suffered some serious deterioration. Now, in order to use resources in a sustainable way again, governments have to re-establish local users' rights and they have to build up again forms of social organization conducive to sustainable productive use of natural resources.

One should be critical and always eager to look what really is 'development' for the people. A term like 'partnership' might be used for volunteer community labour as a means of subsidizing otherwise unprofitable private-sector water supply services. It might be an euphemism for devolving water supply to informal providers and leaving poor, rural communities to their own devices as well. Participation can be empowering as well as exploitative; one should pay careful attention to separate the one from the other (Bakker, 2008).

3.3 | Important concepts

'Ownership', 'post-construction support', and 'sustainability', will turn out to be key concepts in this research. Therefore, in this sub-section the academic background of these concepts will be elaborated on. A proper understanding of what is meant by ownership, post-construction support and sustainability will be crucial for a proper understanding of the *Analysis* and the *Synthesis* of this research.

3.3.1 | Ownership

An important and often discussed concept in the academic debate on community management is the concept of 'ownership'. Because this concept will also be investigated in this research, a brief overview of some of the main ideas on this topic will be presented here.

Ownership is considered one of the three characteristics that groups of water users who successfully apply community management have in common (Doe and Sohail Khan, 2004). At the same time, a lack of this feeling of ownership is blamed for the failure of many other community management projects (Carter et al., 1999; Phillips, 2007). But what exactly is meant with this term 'ownership'? And how does ownership influences the success of a community-managed water project?

A community's 'ownership' of their water supply system is often understood in a broader sense than in having an official property deed of an asset (Harvey and Reed, 2006). In a case study in Ghana, Doe and Sohail Khan (2004) found that a psychological sense of ownership was translated into good community development and resulted in better management of their water supply systems. Phillips (2007) adds that one of the most important factors for achieving sustainability of rural water supply systems is a total commitment of the community to see the project through to completion.

Ownership is often seen as a prerequisite for community management and the key for sustainability (Harvey and Reed, 2006; Botchway, 2001). The idea is that ownership of the water supply system will lead to a feeling of responsibility for its management. This responsibility in turn will lead to a willingness to

manage the water point and to pay for operation and maintenance costs. The research by Harvey and Reed (2006) refutes this wide-spread assumption, as it found that a community's ownership does not automatically lead to a sense of responsibility for the management of the water point or the payment of user fees. Interesting is the fact that the reverse is true as well: communities that are willing to pay user fees do not necessarily have a strong sense of ownership. A research conducted in Zambia demonstrated that the operational failure rate of water supply systems in communities that expressed a relatively high sense of ownership were not lower than the failure rates in communities who were not as aware of their ownership. Harvey and Reed conclude that "ownership in itself is not the 'key' to sustainability".

3.3.2 | Post-construction support

A central topic of this research is post-construction support (PCS). While scholars and practitioners gathered more insights in those elements of project design and project implementation that lead to better performance and more sustainability, and while technologies became easier to use and cheaper over the past years, a lack of sustainability is still one of the major concerns for those involved in rural water supply development in developing countries (Davis et al., 2008). The Policy and Operations Evaluation Department of the Dutch Ministry of Foreign Affairs states that in many development sectors, of which rural water supply and sanitation is one, long term support and monitoring have been neglected for a long time. Instead thereof, the emphasis was on installation and implementation (IOB, 2007). Besides, in much of the literature community management is – implicitly - presented as an autonomous system, for which no external or post-construction support is needed (Davis et al., 2008). This idea has been challenged by Schouten and Moriarty (2003, in Davis et al. 2008), who revealed through a series of case studies that even if the design and planning phase of a water point has been of high quality, post-construction support is still a prerequisite for sustainability.

Davis et al. (2008) are one of the few who conducted a research on the impact of post-construction support on the sustainability in rural water supply. Post-construction support is here considered as assistance provided to a Water User Group or to a system operator. Investment in these individuals is expected to benefit the whole community of water users. Davis et al. recognized three different forms of PCS: management-oriented PCS visits, engineering-oriented PCS visits, and regionally organized training workshops for operators of the water systems. The major conclusions of their quantitative research are that communities that received management-oriented PCS visits performed better than communities that did not received PCS; engineering-oriented PCS visits had no measurable impact on either water system functioning or user satisfaction; communities of which the system operator attended the training workshops had better performing water systems than communities of which the operator did not attend any workshops; and, all forms of PCS are positively associated with financial sustainability (Davis et al., 2008).

All in all, this research follows the conclusion of the Policy and Operations Evaluation Department of the Dutch Ministry of Foreign Affairs, which states that the development cooperation sector needs much stronger efforts to support Water User Groups, as well as monitoring of technical and institutional performance (IOB, 2007).

The relevance of conducting this research on support to community management of water becomes clearly visible as one recognizes that recent academic research has drawn two major conclusions:
1) Although neglected for a long time, post-construction support is essential for sustainability.
2) However, it is still uncertain how this post-construction support should be organized in order to make community management in rural water supply sustainable.

3.3.3 | Sustainability

The concept 'sustainability' is one of the most popular themes in development cooperation. Not without reason, because the concept came into prominence as a consequence of many negative development project impact assessments. Although a lack of sustainability was a problem in all development sectors, the deficiencies in the water sector drew a lot of attention. Abandoned water facilities and broken pumps are

tangible and visible remains of non-sustainable development aid.

However, what exactly is understood by sustainability differs per period, per sector, and per organization. This section will explain what is understood by sustainability in this thesis, thereby paving the road for a clear understanding of the recommendations on sustainability in the final chapters of this research.

Several authors have tried to catch the concept of sustainability in the water sector in one all-covering phrase. Not many of them succeeded, as they discovered that a lot of different factors have to be taken into account. Gleick (1998) managed to come up with a broad and general description of sustainability in the water sector in one sentence:

> "The use of water that supports the ability of human society to endure and flourish into the indefinite future without undermining the integrity of the hydrological cycle or the ecological systems that depend on it" (Gleick, 1998).

This definition is useful as an over-arching beautiful phrase, but in practice not easily applicable. For application of the concept in reality, it is more helpful to understand the different functions of water, to distinguish the values, to understand the short-term and long-term consequences of different choices, and then to prioritize the options on the basis of all these findings. It is important that all stakeholders are taken into account in this process.

Gleick discovered several of water's functions. Next to the fact that water is crucial for sustaining life, it plays an important role in economic development as well as in ecosystem support, in community well-being and in cultural values. For practical application of the concept of sustainability in decision-making, it is very helpful to ask oneself several basic questions, like

- Which functions of water can be distinguished in this particular situation?
- Who are the stakeholders in this decision?
- How are the values of these functions to be prioritized?
- How can possible conflicts between different values be handled?
- What will be the consequences of possible decisions for the short term?
- What will be the consequences of possible decisions for the long term?
- Who are the beneficiaries of possible decisions, and who will be negatively affected? (Gleick, 1998)

Although sometimes difficult, it is very important that consequences of the decisions are overseen in an early state, before decision-making and implementation takes place. For decisions on sustainability in the specific context of the water sector, it is essential that one understands the stocks and flows of global, regional, and local freshwater resources (Gleick, 1998). Every decision might influence people, agriculture or industry just down the stream, but also hundreds of miles away. Likewise, sometimes the consequences of a certain decision are immediately visible, but in other cases future generations will reap the harvest of what is sowed today.

On the basis of the earlier explanation of how the concept of sustainability can be used in practice, Gleick (1998) summed up some criteria for sustainable water planning.

Table III: Sustainability criteria for water planning

- A basic water requirement will be guaranteed to all humans to maintain human health.

- A basic water requirement will be guaranteed to restore and maintain the health of ecosystems.

- Water quality will be maintained to meet certain minimum standards. These standards will vary depending on location and how the water is to be used.

- Human actions will not impair the long-term renewability of freshwater stocks and flows.

- Data on water resources availability, use, and quality will be collected and made accessible to all parties.

- Institutional mechanisms will be set up to prevent and resolve conflicts over water.

- Water planning and decision making will be democratic, ensuring representation of all affected parties and fostering direct participation of affected interests.   (Gleick, 1998)

Now some general aspects of the concept of sustainability in the water sector in general are elaborated on, it is important to discuss the particular characteristics of sustainability in the context of development cooperation. International donors have been important stakeholders of the water sector in Sengerema District in the past, and that is not expected to change in the nearby future.

According to OECD-DAC, sustainability is "the continuation of benefits from a development intervention after major development assistance has been completed". Hereby is "the probability of continued long-term benefits" important, as well as the fact that "the resilience to risk of the net benefit flows over time" (OECD-DAC, 2002).

At last, Downs (2001) provides us with a new and not so ordinary observation on sustainability.

> Often we speak of 'achieving' sustainable development as if it is an absolute goal. By considering sustainability as a dynamic, relative state of cultural evolution in response to changing needs and conditions, we see that there exists a logical relationship between sustainability and a society's intellectual, technological, socio-political, economic, cultural and environmental resources— its human, economic and natural capital (Downs, 2001).

This definition shows the link between sustainability and the other resources of a country, and with that also the challenges that there are for sustainability in a developing countries' context.

In sub section *6.6.1 | Sustainability in Sengerema's water supply sector* the above mentioned characteristics of sustainability in the water sector and sustainability in development cooperation will be combined and applied to Sengerema's specific situation. Subsequently, in sub section *6.6.2 | Practical framework for sustainability in Sengerema's water supply sector* the above mentioned definitions and components will be translated into a practical framework.

3.4 | Latest developments in theory relevant for this research

In the previous paragraphs, attention is given to the paradigm of participatory development, a description of community management, as well as its history, advantages and disadvantages, and an elaboration on the major concepts of this research. This has provided the reader with the basic knowledge on community management that is necessary to understand the purpose of the research and the following chapters. In this last paragraph, several of the recent developments in the theory on community management that are of particular relevance for this research will be highlighted.

Water User Groups are not able to run their facilities independent
Although there are various potential resources available at the community level, other local actors must be deployed to supplement the efforts of the community. Horizontal linkages - e.g. residents, local technicians, local political parties, and local NGOs - and vertical linkages - e.g. (local) government, the private sector, donors, and institutions outside the settlement - are essential for a community in order to arrange the support they need for construction and operation of their water supply system (Kyessi, 2005). From studies in joint forest management, it is learned that good communication, education and incentives will enhance participation (Appiah, 2001). The communities themselves are responsible for organisation and co-ordination, and have to support all the other stakeholders with the resources they have available. The public sector then gives advice and technical support, the private sector constructs the infrastructure, and the donors provide the finance (Kyessi, 2005). It turned out to be important to make people aware of their own capacities and resources; this can increase the options available to them. As well, the involvement of local people in the decision-making and planning process is very important in any participatory process. Arrangements that involve various degrees of authority and responsibility shared between stakeholders are ingredients of a participatory process that will influence the outcome positively (Appiah, 2001). Advice or intervention from professionals might contribute, but is only helpful when it is wholly recognised and accepted by the community (Kyessi, 2005).

Cost-recovery

The pre-condition for water supply to be sustainable and efficient is that there must be an effective cost recovery system. Without cost recovery a project collapses. Even when the construction costs are paid by an external party, a cost recovery mechanism is necessary for operation and maintenance (Kyessi, 2005). Evaluations by donors of earlier projects show that without a financing strategy long term results cannot be ensured (IOB, 2007). Costs can be reduced when the community is given the responsibility to organize and manage the construction, operation and maintenance themselves. In general, the financial contribution of the community is not sufficient for upgrading the infrastructure to a higher technological level. Adoption of a higher technology is only possible with significant financial support from NGOs or the government (Kyessi, 2005).

A significant number of communities expects and receives capital and repair subsidies from other entities

Although cost-recovery appears to be essential for long-term sustainability, many communities count on NGOs, churches, private individuals, companies, and even local governments for repair or replacement. A lot of Water User Groups do not ask their water users for user fees in order to become self-sufficient. A large, multi-country research project in Bolivia, Ghana, and Peru has proven that many of these communities succeed in this strategy, because often one of the mentioned parties is willing to provide free spare parts, free repairs, or cash donations (Whittington et al., 2008).

Varying interests among stakeholders

Although the official purpose of all stakeholders is to provide the communities with sufficient, safe and clean water, and although they all strive for the achievement of the same goals – e.g. the Millennium Development Goals -, in practice they might have slightly varying interests (Kyessi, 2005). Example given, the political will to initiate the necessary policy changes is crucial for successful participatory management, but is not always available (Appiah, 2001).

Change in attitude is needed

Within the communities, a change in attitude is needed. What is necessary is the development of a culture of taking responsibility, a culture of merit based on skills, a culture of contracting (with beneficiaries), and a culture of accountability and evaluation (Bergh, 2007).

The problematic role of the government

At first, there is the well-known issue of over-ambitious development plans in many developing countries. Then, there is a legal problem with the contractual approach. In this approach, the government administration concludes contracts with its citizens. However, the user committees representing the citizens often do not have a legal status. This makes it very difficult to force the administration to keep its promises and fulfil its obligations. One of the reasons for government failure is the lack of human resources, quantitative as well as qualitative, at the government level. However, serious investments – in the form of training, workshops, visits to projects in other regions or even other countries – in human capital is much appreciated by the employees, but has led the population to disillusion, arguing that this money should be invested in their development and not in nice events for the employees. Without a well thought-out plan and a very careful explanation to the rural beneficiaries, it is very difficult to combine staff training and poverty alleviation (Bergh, 2007).

4 | REGIONAL CONTEXT

In the previous chapters, the *Thematic Context* of water in development cooperation and the *Theoretical Framework* of community management of water have been discussed. Both chapters are essential for understanding what this research is about. However, in order to understand what is going on in community management of water in Sengerema District, one has to be aware of the specific *Regional Context*.

Some general figures of water problems have been provided, but in order to conclude this thesis with custom-made recommendations, one needs to know the specific situation of water in Sengerema District. The major paradigms in development cooperation of the past decades have been discussed, but for understanding today's situation of Sengerema District, one needs to know the major events in Tanzania's history, in particular those concerning water supply. Likewise, the general concept of community management, implemented in many countries over the world, has been explained. But as no district is the same as another, as not even one community is the same as any other community, one needs to know more about Sengerema's specific context in order to understand the general concept of community management within the local context of Sengerema's communities.

Therefore, in this chapter, attention will be given to the country-profile of Tanzania, as well as the general context of the research area, Sengerema District. Special paragraphs will be devoted to the water sector, the legal context and the institutional context. This chapter concludes with a short introduction on the host organization.

4.1 | Country-profile Tanzania

Relevant for this research are the general characteristics of Tanzania, its political history, its governmental system, and the country's fight against poverty. These will be discussed in the following paragraphs.

4.1.1 | Characteristics of the country

The East-African country Tanzania is surrounded by Mozambique, Malawi, Zambia, the Democratic Republic of the Congo, Burundi, Rwanda, Uganda, and Kenya. On the east side, it borders the Indian Ocean. The 41 million Tanzanians belong to about 130 different tribes. The country is subdivided in 26 regions, which are further divided into 127 districts. Districts can be divided in wards, villages and sub-villages (Mastwijk, 2009).

The focus of this research is on management of water in rural areas. In Tanzania, 80% of the population lives in the rural areas. These areas are characterized by a primary mode of production of specifically agriculture. Agriculture accounts for about 50% of the national income, and 75% of merchandised exports. It is the reliable source of livelihood of half of the Tanzanian population (UNCDF, 2009).

Tanzania is in terms of per capita income among the poorest ten percent of national economies of the world (CIA, 2010). Tanzania receives assistance from multilateral donors (The World Bank, IMF) and bilateral donors. In 2007, the official development assistance was about 69 US Dollar per capita. In alleviating poverty, a lot of different factors play a role, and in improving the water supply in a country, several dimensions of human development will influence the process. According to the Human Development Index, 45% of all Tanzanians were not using an improved water source in 2006. 88,5% of the population lived below the poverty line of $1,25 per day in 2007 (UNDP, 2009). The life expectancy at birth is 52 years; both the birth rate (34 births per 1000 people per year) and the death rate (13 deaths per 1000 people per year) are relatively high. The country's fertility rate is 4,31 children born per woman. Tanzania belongs to the top 10 countries where HIV/AIDS is a serious threat, with an adult prevalence rate of 6,2%, 1,4 million people living with HIV/AIDS and 96.000 yearly[7] deaths as a consequence of HIV/AIDS. The literacy rate counted by the census of 2002 was 69,4% (CIA, 2010). Despite these worrisome figures, in the Human Development Index of 2009 Tanzania is among the countries with medium human development. Tanzania is ranked on position 151 of 182, which is relatively good compared to the majority of Sub-Saharan African countries

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7   This figure of 96.000 deaths as a consequence of HIV/AIDS is an estimation for the year 2007 (CIA, 2010).

(UNDP, 2009). The last years show some improvements in social and economic development. Despite the worldwide economic recession, Tanzania experiences significant economic growth, due to solid macroeconomic policies and continued donor assistance (CIA, 2010).

4.1.2 | Political history

The United Republic of Tanzania came into existence on April 26, 1964, as a merger of the former British colony Tanganyika and the island state Zanzibar. The new independent government abolished local chiefdoms (Van Klinken, 2003). The Arusha Declaration of 1967 heralded an era in which Tanzania attempted to become a self-relying socialist country with a strong central government. The principles of the 'African path to socialism', written down in the Arusha Declaration, entailed among other things the nationalisation of the private sector. Independent local government bodies and other forms of local self-organization were abolished or prohibited. The central state became the only 'vehicle for development' (Gaventa, 2002). Just as the former communist regimes in Eastern Europe had a great impact on the culture and on the mindset of the people, it appears that this African socialism has had an impact on the people as well. Their apathy, their reticence, and their high expectations from the government, all appear to be remnants of this socialist period. In the same period, president Nyerere introduced the 'Ujamaa', a forced movement of population groups to artificially created villages.

In the 1980s, Tanzania, just as many other African countries, had to turn to the IMF and the World Bank in order to survive the international debt crisis. Tanzania was merely bankrupt, and the earlier rejoiced pan-African socialism was declared a failure. In the early 1990s the multi-party democracy was introduced in Tanzania, after decades of CCM as the only existing and ever ruling party. However, up to date, CCM has had the majority of the votes at all national elections, and the role and influence of the opposition parties should not be overestimated (Mastwijk, 2009).

4.1.3 | Governmental system

The system of community management exists within and is influenced by the Tanzanian governmental system. Features of that specific context, such as decentralization processes and legal pluralism, logically have consequences for the functioning of community management.

Under the British rule, there was already a form of decentralization in Tanzania. Just as in many of their colonies, the British colonizers set up a system of indirect rule, in which local traditional chiefs were used for the provision of local services. The similarity with the current system, in which the central government has delegated a lot of responsibilities, among others concerning water provision, to the regional and local level, is worth mentioning. Since independence in 1961, the Tanzanian government has been switching between centralisation and decentralisation policies. The introduction of the Local Government Reform Programme (LGRP) in 1996 appears to be a definitive choice for decentralisation, in the form of granting a lot of independence to Local Government Authorities (LGAs). The LGRP is based on the idea of Decentralization by Devolution (D-by-D). Due to this programme, Tanzania is considered as one of the pioneers in decentralization in Sub-Saharan Africa. The general objective of Decentralization by Devolution is the improvement of public service delivery. The increase of citizen participation and good local governance are goals themselves as well as means to reach the general objective (Mastwijk, 2009; Kawa and Makundi, 2007; IOB, 2007). For the water supply in Sengerema District, this means that the District Water Department is a more relevant and more determinative entity than for example the central government's Ministry of Water. The national government has the responsibility to strengthen the Local Government Authorities, which in turn are responsible for water provision and other public services (IOB, 2007). There is still serious criticism on Tanzania's decentralization and the functioning of the current governmental system. It is said that decentralization creates extra layers for corruption. The legal framework necessary to prevent this is not yet implemented and institutionalised sufficiently. This is painfully visible in the many cases of local government employees who were caught for corruption, without getting fired. They were only transferred to another district, even without giving notice to the population.

It is important to mention that Tanzania is a country with legal pluralism, i.e. the legal system is composed

of customary law next to statutory law (Sokile et al., 2003). In practice, it means that people follow rules that are locally well-known, but have never been written down. When new legislation contradicts the traditional customary law, there is a chance that the traditional rules still will be followed by the communities.

In Tanzania, there is a system of elected governors next to a system of appointed governors. The central government is largely top-down organized. A lot of important civil servants are directly appointed by the president. From the highest level down to one of the lowest, the village level, there is always someone in charge representing the central government (e.g. District Executive Director, Village Executive Officer). Besides, up to the District Level, there is also someone who is elected by the local communities (e.g. District Councillor, Village Chairman). At the local level, the people have more influence on the employment of the government officials. *Figure B: Government structure* is a graphic reproduction of the structure of the local government. The District Water Engineer, with whom was worked closely together in this research, is part of the executive staff at the district level. The Engineer, who is the head of the District Water Department, is directly accountable to the District Executive Director.

Figure B: Government structure
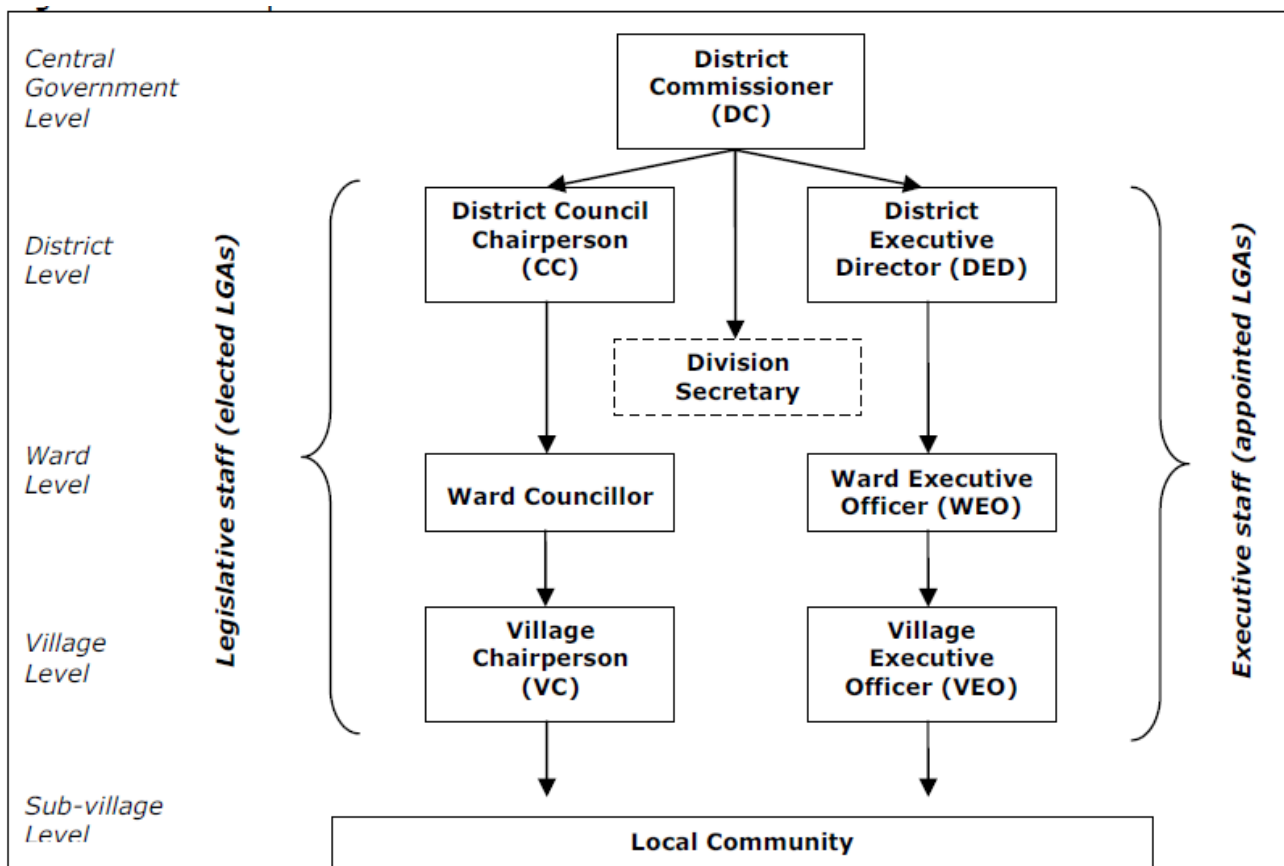
(Mastwijk, 2009)

The functions of the local government authorities (LGAs) are very divergent, and include the promotion of social welfare and economic well-being; the development of the rural and urban economy; improvements in agriculture, trade, commerce and industry; the enhancement of healthcare, education, and the social, cultural and recreational life of their inhabitants; and the development, mobilization and application of productive forces in the war on poverty, diseases and ignorance. According to the Policy on Local Government Reform, the local authorities are responsible for the provision of basic public services such as water (Kawa and Makundi, 2007). However, as will be discussed in the section on the legal context, this does not mean that the District Water Department has to dig the shallow wells themselves.

The Local Government Act is somewhat vague on the functions and responsibilities of the lower levels of local government, such as the village governments. The lowest level of the local government structure are

the sub-villages or hamlets, *kitongojis* in Swahili. They do not have any legislative or decision-making power, but they are expected to function as a sort of forum for mobilizing community participation (Kawa and Makundi, 2007).

4.1.4 | The fight against poverty – Strategies & Policies

The several national and international development policies and poverty reduction strategies make clear that poverty reduction is a high priority for the Tanzanian government. In these policies Tanzania's goals as well as its means are discussed.

During this research the National Strategy for Growth and Reduction of Poverty 2005-2010 (NSGRP), and the Vision 2025 were widely known and put into practice. The NGSRP is known among the people of Tanzania as the MKUKUTA, the *Mkakati wa Kukuza Uchumi na Kupunguza Umaskini Tanzania*. The NSGRP is a follow-up of the 2000 Poverty Reduction Strategy Paper, that was written for the IMF and the World Bank. The NSGRP mentions three clusters of indicators:

1) (economic) Growth and reduction of poverty
2) Improvement of the quality of life and social well-being
3) Governance and accountability

These three clusters are very much related to each other. The economy (cluster 1) benefits highly by an effective government, and can only flourish in a country where there is respect for the rule of law (cluster 3). At the same time, the provision of public services such as water, sanitation, education, and health (cluster 2) are hindered significantly by corruption at the government level (cluster 3) (Mastwijk, 2009). The national target for water in the NSGRP is that the percentage of the rural population with access to safe and clean water will increase from 53% in 2003 to 65% in 2010 (IOB, 2007). In the first cluster, economic growth, some improvements can be seen in the past decade. Nevertheless, the number of people living below the poverty line has increased by 1,3 million between 2001 and 2007. What is more, it is predicted that neither the targets of the MDGs nor the objectives of the NSGRP concerning for example water and sanitation will be reached in the years to come (cluster 2) (Mastwijk, 2009).

A bit less practical than the NSGRP is the Vision 2025, written by the Government and Planning Commission in 1995, and part of a larger African hype in which all leaders started writing 'visions' for the future of their country. It sets out a vision for the year 2025 on the fields of

1) High quality livelihood
2) Peace, stability and unity
3) Good governance
4) A well educated and learning society
5) A competitive economy capable of producing sustainable growth and shared benefits

The goal is that in the year 2025, Tanzania will be a middle income country with a high level of human development. Critics on the Vision 2025 blame it for being to much donor-driven and over-ambitious (Policy Forum, 2009).

4.2 | Sengerema District

Sengerema is one of the eight districts of Mwanza region, the country's largest region by population size (JICA, 2006; Kawa and Makundi, 2007). The total population of Sengerema District is approximately 635.803 persons. The last census of Tanzania was in 2002, so this number is a projection based on the estimated growth rates of the past years (SDC, 2010). Sengerema District's population doubled between 1978 (243.630 people) and 2002 (498.993 people), and it is still growing with an annual growth rate of 3,7%. The average size of a household in Sengerema District is 6,5 persons, a significantly higher number than the national average of 5,3 persons per household (Kawa and Makundi, 2007). There are 124 villages in Sengerema District, divided over 25 wards (UNCDF, 2009; Kawa and Makundi, 2007). The population density of Sengerema District is the lowest of the whole Mwanza region, with 64,8 people per square kilometre. 81,8% of the population in Sengerema District lives in rural areas. This percentage is slightly higher than the country's average. In the classification of different types of rural areas by Wiggins and Proctor, Sengerema,

the capital of Sengerema District, belongs to the 'middle country side'. The largest part of the district is part of the category where transportation costs are very high due to the distance factor in combination with infrastructure deficiencies and the likely presence of physical obstacles: the 'remote rural areas' (Wiggins and Proctor, 2001; Huisman, 2006).

Institutional mapping revealed that there are 1017 micro, small, and medium enterprises (MSMEs) in Sengerema District (UNCDF, 2009). According to UNCDF (2009), Sengerema District has significant potential for local economic growth, although the institutional economic bases, and legal and regulatory frameworks are still weak. Sengerema's social structure is predominantly characterized by a multitude of vulnerable poor, with only a few who are better-off (UNCDF, 2009).

4.3 | The water sector

After general profiles of Tanzania and Sengerema District, it is time for an investigation of the water sector of Tanzania. How has the sector developed since independence, what is the current status of the country's water sector, and how is water supply organized in Sengerema District?

4.3.1 | History of the water sector in Tanzania

In the case of community management of water in Tanzania, considering the past might be helpful to understand the present. Pre-colonial Tanzanian societies were, when it comes to matters related to resource use, in general governed by a set of dynamic, change-sensitive and community-based resource management initiatives. The ones responsible for the organization of the country's water supply might take advantage of this knowledge when designing a structure that suits the country's culture (Sokile et al., 2003). Government efforts to curb water problems started in Tanzania's colonial times. At first the Germans, and subsequently the British, investigated the feasibility of irrigation agriculture and designed water laws and by-laws. Independence did not result in too many changes in state policies. The Arusha Declaration of 1967 gave Tanzania a more socialist economy, in which private ownership of natural resources was discouraged. Natural resource management was incorporated in a broader national framework of sustainable social and economic development, which required collective resource use and ownership. The earlier mentioned Ujamaa policy, which ordained that people had to move from their original clan set up and settle in villages away from their home areas, had also an impact on the customary arrangements for land and water management (Sokile et al., 2003). The central government implemented projects without consulting the local community. Because of the socialist policies of the 1970s and 1980s, the image of the government as the national provider of free public services was still strong in the 1990s. Nowadays, the people get more and more used to the idea that they have to pay for the services they need, and that they have to take action themselves in order to get them. However, old habits die hard. The government officials have to adapt to their new roles, as service providers and advisers instead of constructors and technicians. Even more, they have to get used to the fact that the Water User Groups are the owners of their water supply systems now, and that they have to take the decisions. For the water users, it is tough to change their role from passive receivers to pro-active owners and managers (IOB, 2007).

Table IV: History of water in Tanzania provides an overview of the major decisions and events that had an impact on the situation of water in Tanzania.

Table IV: History of water in Tanzania

1967	Arusha Declaration; abolition of water user fee
1971	Launch of 20-year rural water supply program
1972	Abolition of local governments
1974	Introduction of Water Utilization Act (control and regulation)
1975	Separation of Water Department and Irrigation Department
1981	Amendments of Water Utilization Act (control and regulation)
1981	Designation of Tanzania into nine Water Basins
1991	Institution of National Water Policy
1994	Review of water user fee
1995	World Bank Appraisal
1996	Start of River Basin Management / Smallholder Irrigation Improvement Project (RBM/SIIP)
1999	Draft new water policy
2001	Merge Ministry of Water with Livestock
2002	National Water Policy
2006	National Water Sector Development Strategy
2007	Water Sector Development Program (2007-2012)
2009	Water Supply and Sanitation Act, 2009
2009	Water Resources Management Act, 2009

Based on Sokile et al., 2003; MWI, 2009; WSSA, 2009; WRMA, 2009.

The implementation framework that is defined by the National Water Policy of 2002 and the National Water Sector Development Strategy of 2006 is in line with Tanzania's enduring process of decentralization (MWI, 2009). In the past years, a sector-wide approach has been adopted in Tanzania's water and sanitation sector. Besides, funding has increased dramatically and new legislation has passed. In 2008, a lot of action has been undertaken to improve national planning, budgeting and procurement, as well as institutional strengthening and performance of monitoring systems (TAWASANET, 2009).

4.3.2 | Current situation of the water sector in Tanzania

The evolution of water management institutions has taken a long route in Tanzania. However, whether it was the pre-colonial, the colonial or the current post-independence period, institutions related to water management have always been fragmented. The focus of these institutions has always been on the supply of technology. Their organizational development was not coordinated. The fragmentation is clearly visible in the way the responsibilities are divided. Rural water supply is under the Ministry of Water at the national level, and under the District Water Engineer at the district level; irrigation is under the Ministry of Agriculture and Food Security; hydro power is under TANESCO in the Ministry of Energy and Minerals; the conservation of biodiversity in water bodies is under the Ministry of Natural Resources and Tourism; construction of resort facilities and hotels along the shorelines of lakes, rivers, islands and oceans is under the Planning Authority; industrial discharge to water is under the Ministry of Industry and Commerce. Coordination between all these different institutions is insufficient. Besides, this institutional framework ignores informal institutions, such as traditional by-laws, norms and restrictions (Sokile et al., 2003). Next to

these institutions, there are many national and international NGOs that play a role in water[8]. In order to overcome this fragmentation, several parties work together in the Water Sector Development Program (2007-2012). In the year 2010, the fifth Supervision Mission of this program has taken place. This is a two-week during meeting of international donors and the government of Tanzania. In this supervision mission the progress of development is discussed, and recommendations and exhortations are given to the Ministries concerned. In 2010, the mission defined several problems, among which were:

1. Financial flows are not according to plans.
2. There are doubts about the sustainability of the facilities. In the whole country, almost no Water User Groups are registered. Although the registration of Water User Groups is already ordained in the National Water Policy of 2002, this has definitely not yet become common practice. In 2009, in the whole country only 65 Water User Groups were registered.
3. Problems with contract management and procurement. The Minister complains that the documents he receives from the districts are not of good quality and not in time (Ueda et al., 2010; MWI, 2009).

More information on a.o. the progress of the past years in the field of construction and rehabilitation of community water points can be found in *Appendix II: Rural water supply in Tanzania*. Tanzania's Water Sector Development Program (2007-2012) is, with a one billion dollar budget and a large number of implementing entities, one of the largest water sector programs in Africa (MWI, 2009). This seems to contradict the statement of WaterAid that the era of donor-funded rural water projects has almost come to an end. When one takes a more careful look, a shift is visible from project funding towards basket funding and general budget support (IOB, 2007). At the same time, the national government spends more than 90% of its budget on large national projects, such as a pipeline from Lake Victoria to Shinyanga region. Only 10% of the water sector budget went to Local Government Authorities, and the District Councils themselves were allocating just a small part of their revenues to rural water supply as well (IOB, 2007). This developments show once more the necessity for Water User Groups to become self-supporting.

In Tanzania, the gap between access to clean and safe water in urban and rural areas is still wide (TAWASANET, 2009). The poor struggle most for access to adequate water resources. They are less aware of the water resource law, and the rights and protections it provides for them. Even if they are aware, they are less able to access decision making processes and platforms within water governance (TAWASANET, 2009). In 2003, 53% of the rural population and 73% of the urban population of Tanzania had access to safe and clean water. In 2006, the numbers increased to 56% and 78%; in 2008 it was 58% and 83%. The targets for 2010, as mentioned in the National Development Vision, the Millennium Development Goals, and the National Strategy for Growth and Reduction of Poverty (MKUKUTA), are supply of clean and safe water to 65% of the rural and 90% of the urban population. Tanzania's Vision 2025 mentions a target of universal access to safe water in urban areas and a coverage of 90% in rural areas. To achieve these targets, the local government will be empowered, communities will be trained, and a broad-based approach will be used to mobilize financial resources, knowledge, skills and experience as well as commitments. Of this empowerment of the local government and mobilization of financial resources, knowledge, skills and experience, not much is seen yet in the rural areas itself, as one of the main reasons of the still unsatisfactory situation of Tanzania's water provision is the lack of human resources at the local government level. In order to carry out the government's plans, in total 460 engineers and 1125 technicians are required at the local government offices in the country. However, by June 2009, only 156 engineers and 182 technicians are under contract (MWI, 2009).

The several topics discussed in this subsection demonstrate clearly that most problems concerning water in Tanzania are not so much about the lack of water itself. Indeed, Tanzania is endowed with sufficient freshwater resources to meet its current water needs (MWI, 2009). The challenge for the government is to effectively and efficiently allocate water.

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8 Because the source *Sokile et al., 2003* might be a bit outdated, this information has been verified by the District Water Engineer of Sengerema District.

4.3.3 | The water sector in Sengerema District

The water sources existing in Sengerema District can generally be classified as surface water, groundwater and rain water. The water is provided to the communities by means of different technologies. Surface water is collected from Lake Victoria, rivers, streams, and small-scale dams. In the largest village there is a piped scheme which supplies water from the lake. In other places the people are using boreholes and shallow wells with hand pumps, protected springs, and unprotected springs (SDC, 2010; JICA, 2006). The Japan International Cooperation Agency (JICA) conducted an investigation on water quality and water availability in Sengerema District. In considering water sources, the important factors are
- Sustainability of water use
- Availability throughout the year
- Safety and quality of water (JICA, 2006)

According to an investigation conducted by JICA, the extractable groundwater is 6.357.221 m³ per day. In 2006, the actual extraction was 1644 m³ per day. When JICA has realized its plans for the construction and rehabilitation of wells, the extraction will increase with 2507 m³ per day, which will result in a total extraction of 4151 m³ per day in 2015. This is still only 0,0652958 % of the total extractable amount of groundwater (JICA, 2006). This confirms that the statement in the previous sub-section that Tanzania is endowed with sufficient freshwater resources to meet its current water needs accounts for Sengerema District as well. Concerning availability throughout the year, the research showed that the water quality in Sengerema District is affected by seasonal difference. However, it has to be mentioned that shallow wells are much more affected by seasonal difference than boreholes. Boreholes are 75 meters up to 100 meters deep. JICA also conducted a water quality analysis. Except for some bacterial contamination, the groundwater and surface water in Sengerema District did not exceed the Upper Limit of Tanzanian Standard for drinking water (JICA, 2006).

Figure C: Full Water Point Coverage in Sengerema District
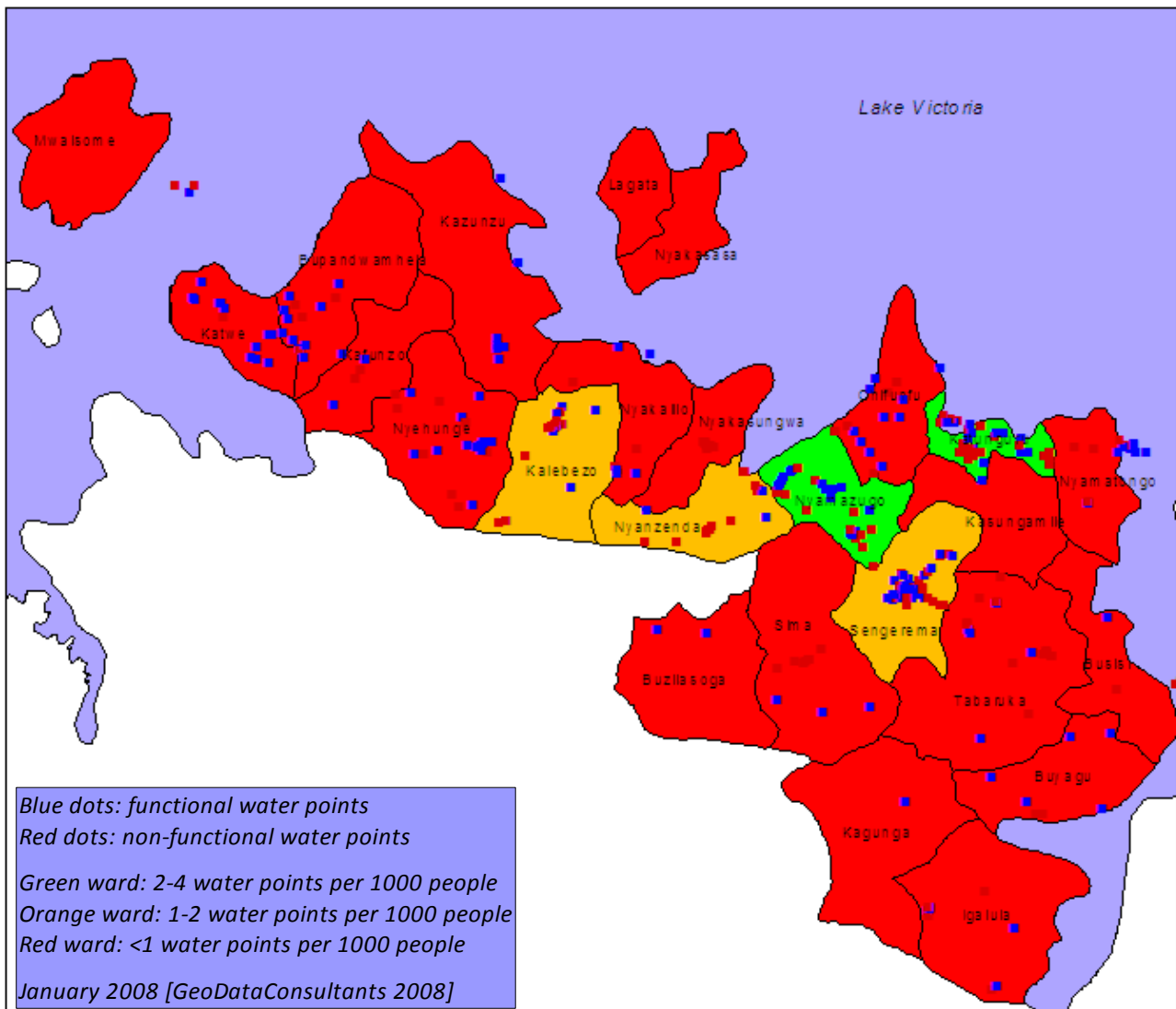
According to a baseline study, the water point mapping study conducted in 2007 (GeoDataConsultants, 2008), there are 348 water points in total in Sengerema District. 221 of them are managed by a Water User Group. The large majority of the wards have less than one water point per 1000 people, which is way below the prescribed number of the National Water Policy (MWLD, 2002; GeoDataConsultants, 2008). The lift capacity of a hand pump is 0,015 m³ per minute, which equals 7,2 m³ or 7200 litres per day (assumed that the pump is in use for 8 hours a day). 7200 litres equals 360 buckets, and is enough to cover the official need of water per capita for 240 persons. This calculation shows that even four water points per 1000 people is officially not enough to fulfil the needs of 1000 people. As Sengerema District is surrounded by water on three sides, and groundwater development can be relatively difficult, villages within 9 km from Lake Victoria are advised by JICA to use water from the lake instead of groundwater (JICA, 2006).

For the other villages, JICA concluded that operation and maintenance, as well as little repairs of hand pumps, are in general easy and inexpensive. Hand pumps are used for a long time already, and despite some disadvantages, donors and the District Water Department regard their use as appropriate. Costs for operation and maintenance (O&M) of these hand pumps consist of the costs of spare parts, supplies for periodical O&M activities, and personnel expenses of technicians. Based on seven buckets per household per day, JICA estimates that the O&M costs for a borehole with hand pump will be Tsh 4,4 (€ 0,0022) per bucket or Tsh 924 (€ 0,46) per household per month. Therefore, they recommend the Water User Groups to ask a contribution of Tsh 5 (€ 0,0025) per bucket or Tsh 1000 (€ 0,50) per household per month (JICA, 2006).

It can be concluded that in Sengerema District the Village Water Committees and Water User Groups that have been installed in the past, have merely failed to meet the expected roles and responsibilities concerning a sustainable management of their water supply facilities. The main reasons for this failure are an immature sense of ownership of the user committees and limited support from the District Water Department. The key for effective and sustainable operation and maintenance of the facilities in the villages is therefore institutional development of the responsible organizations at the community level. This differs from establishment of a Water User Group, to legal registration of this group, to training and education on community mobilization, financial skills and technical skills. Minor repairs of the facilities have to be carried out by the villagers themselves. Therefore, it is necessary that (a few members of) the Water User Groups receive training from the water technicians of the District Water Department. The provision of a tool kit is required as well. Major repairs have to be taken care of by the water technicians of the District Water Department, on request of the Water User Group (JICA, 2006).

4.4 | Legal context

A special paragraph is devoted to the current legal framework in the water sector. Understanding the laws on water supply, together with obligations and rights of water users and responsibilities and obligations of the government, will be essential for the provision of useful and sustainable recommendations at the end of this thesis. A recommendation for the local government that contradicts the law is definitely unsustainable. Besides, in this section the responsibilities of both the government and the Water User Groups will be enumerated, so that their functioning can be checked in chapter *6 | Analysis*.

The most relevant legal and policy documents on rural water supply in Tanzania are the National Water Policy 2002, the National Water Sector Development Strategy 2006, the Water Supply and Sanitation Act No. 12 2009. The Water Supply and Sanitation Act came into operation on August 1, 2009, in order to give effect to the National Water Policy of 2002 and the National Water Sector Development Strategy of 2006 (MWI, 2009).

4.4.1 | The National Water Policy 2002

The targets of the National Water Policy 2002 for the rural areas of Tanzania are
– one water point per 250 persons
– nobody has to walk a distance of more than 400 meters to the nearest water point (MWLD, 2002)

The National Water Policy deals, just as its predecessors, merely with institutional issues (IOB, 2007). Just in line with other decentralization policies, the NAWAPO embodies the principle of decentralization and devolution of water supply and demand management to the lowest appropriate levels (MWI, 2009; IOB, 2007). Its targets are in line with those of the other prominent development documents of Tanzania, the Vision 2025 and Tanzania's first Poverty Reduction Strategy (IOB, 2007).

One of the greatest amendments in the 2002 National Water Policy is the transfer of responsibilities from the government to the rural communities: "Communities will be empowered to initiate, own and manage their water schemes including water wells" (MWLD, 2002; IOB, 2007). These communities are expected to cover at least the full costs for operation and maintenance of their facilities. They have to install their own Water User Groups, which are responsible for operation and maintenance works and for the collection of water fees (JICA, 2006).

4.4.2 | The National Water Sector Development Strategy 2006

The National Water Sector Development Strategy 2006 (NWSDS) sets out the road map for the implementation of the National Water Policy (IOB, 2007).
It contains the following components:
• strengthening decentralised planning, project preparation, funding, implementation and management through local governments;
• improving the capacity of central government institutions to facilitate and channel technical

assistance to local governments;
- increasing the capacity for sustained delivery of goods and services by developing and utilising local private sector capacities in facilitation, engineering, construction, spare parts distribution and maintenance;
- developing a strategy for national hygiene promotion, sanitation and communication (IOB, 2007).

4.4.3 | The Water Supply and Sanitation Act 2009

In the Water Supply and Sanitation Act 2009 (WSSA, 2009), Water User Groups are called Community Owned Water Supply Organizations (COWSOs). Earlier registered Village Water Committees will automatically become Community Owned Water Supply Organizations (MWI, 2009).

COWSOs can be established by agreement of the majority of the members of the community (Art. 31). For registration, a COWSO has to set up a constitution or a Memorandum of Agreement, which should be submitted to the Local Government Authority for approval (Art. 31, 33). As soon as the COWSO is registered, it is responsible for the water supply system (Art. 34). The COWSO is obliged to meet the costs of operation and maintenance and to make a contribution (cash or kind) to the the capital costs (Art. 37). In order to fulfil this obligation, COWSOs are allowed to charge consumers for the water supplied (Art. 32, 34). The Local Government Authorities are responsible to promote and facilitate registration of the COWSOs (Art. 8, 40) and to provide technical and financial support (Art. 8, 39, 40) (MWI, 2009).

4.5 | Institutional Context

There are several entities who play a major role in the water supply of Sengerema District. The functioning of these entities will be investigated in the research. In this sub-section, some basics on the Water User Groups, on the District Water Department, on the District Forum for Local Economy, and on the in the district present donors will be discussed.

4.5.1 | Water User Groups

In the *Theoretical Framework*, in sub-section *3.2.3 | Water User Groups,* some information on Water User Groups (WUGs) as an essential component of community management of water has been provided. Therefore, the information given here will be very concise and deals purely with specific Tanzanian features of WUGs and with the position of the WUGs in the water sector of Sengerema.

A Water User Group will be established in a village on request of the District Water Department. The prescribed form of a WUG consists of twelve members and is gender equal. This gender equality is a result of critique from the past on the gender dynamics and imbalances that used to characterize resource use in Tanzania and in Sub-Saharan Africa as a whole. However, it appears that although the legal requirement is fulfilled, the imbalances are still there (Sokile et al., 2003). A Water User Group (WUG) is responsible for operation and maintenance, and repair of the borehole or shallow well, as well as for the collection of water fees (JICA, 2006).

In the system, a Water User Group is created and functions on the sub-village or community level. At the village level, there is supposed to be a Village Water Committee[9], that is responsible for all Water User Groups in the village. To overcome the misuse of funds within the village government, the financial management of the WUG should be independent from that of the VWC and of the village government. The District Water Department provides mainly technical support to the Water User Groups and monitors the activities (JICA, 2006).

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9   The words 'there is supposed to be' are deliberately used here. Already before the start of the research, having serious doubts on the actual existence of these Village Water Committees was justified. Village Water Committees are a remnant of an earlier policy.

A detailed overview is provided in *Figure D: The official institutional context of rural water supply*.

Figure D: The official institutional context of rural water supply
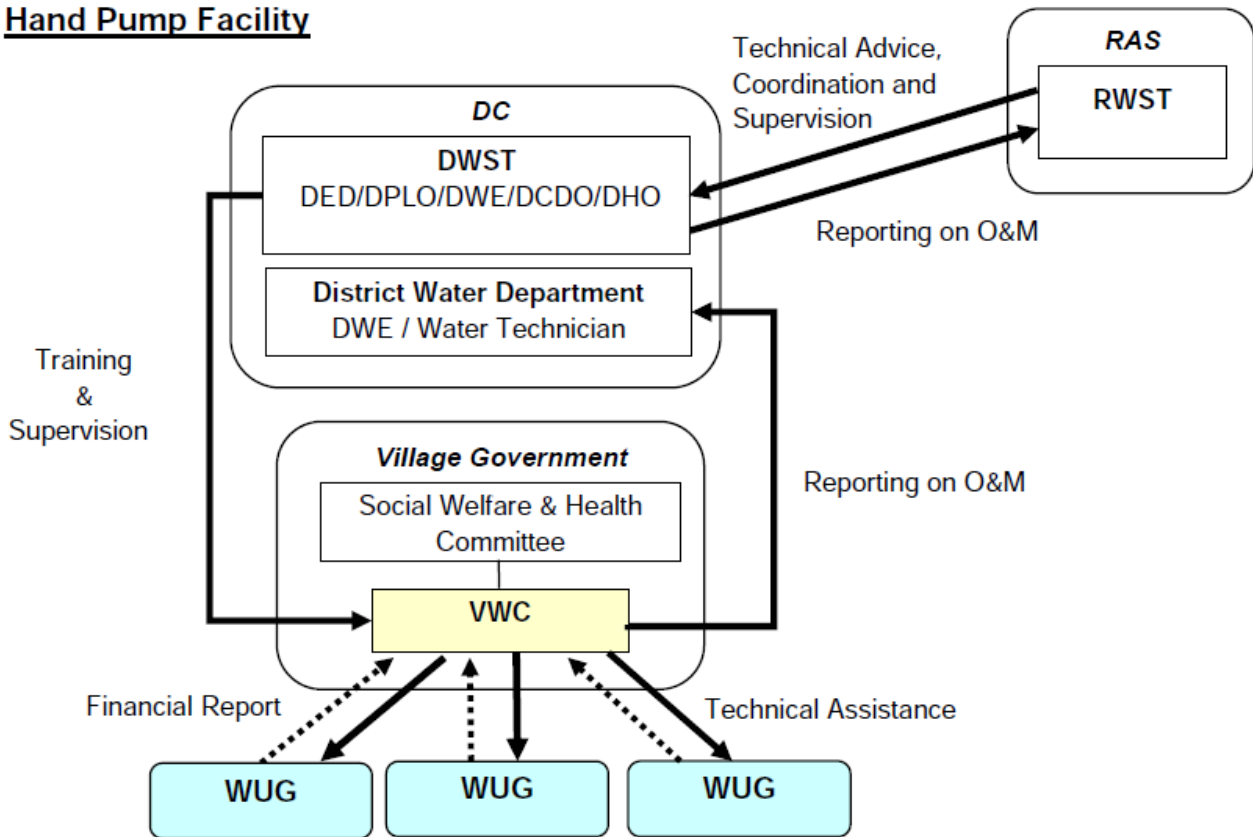
(JICA, 2006)

4.5.2 | District Water Department

In *Figure D: The official institutional context of rural water supply* is visible that the District Water Department (DWD) and the District Water and Sanitation Team (DWST) are the main governmental bodies that are charged with the responsibility of rural water supply. The head of the DWD, the District Water Engineer (DWE), is a member of the DWST, together with the District Executive Director (DED), the District Planning Officer (DPLO), the District Community Development Officer (DCDO), and the District Health Officer (DHO) (JICA, 2006). The District Water Department is responsible for the establishment of an enabling environment for the communities, in which they can own and manage their water supply facilities in a sustainable way, and in which more and more people will have access to safe and clean water. Officially, the District Water Department is responsible for planning and management of the WUGs' rural water and sanitation plans, for the procurement, financing, management and monitoring of contractors, consultants, and other local service providers.

While the District Water Department used to be fully responsible for everything that had to do with water supply in the district, including the construction of water points, nowadays its job is to regulate rural water supply services (MWI, 2009).

For this job, the District Water Department has 24 employees. Of them, only one, the District Water Engineer, has been enrolled at a university. Of the other 23 employees, there are four who have finished a diploma of the lowest level of secondary school (Form 4), and for seventeen primary school is the highest level of education on their Curriculum Vitae (SDC, 2010).

4.5.3 | District Forum for Local Economy

The District Forum for Local Economy (DFLE) is a promising and rather unique multi-stakeholder-forum in Sengerema District. The DFLE is an example of a "partnership between (local) governments, civil society, including community based groups and the private sector to design and implement local development policy" (Huisman, 2006). Although not yet directly involved in the water supply sector, because of its novelty as well as its auspiciousness definitely worth investigating in this research. The fact that the (potential) role of the District Forum for Local Economy in support to community management of water will be investigated here increases the relevance of this research for other regions in the country where a similar Public Private Partnership will be created.

The original rationale for the foundation of the District Forum for Local Economy is expressed in one beautiful sentence: "It is out of stakeholders' mutual understanding a forum for Sengerema district was established to bring together the public and private sector as well as entrepreneurs in fostering the economic development of the district" (UNCDF, 2009).

The DFLE serves as:
   – A forum for dialogue that brings together partners of development from the private sectors as well as the donor community.
   – A transparent body that enables development stakeholders to know why, how and what the local government is doing for them and how resources are allocated district-wide.
   – A platform for integrated strategic planning for the district's development (e.g. the DFLEs Strategic Plan and Budget 2008-2011)
   – A forum for standardizing intervention approaches of the different development actors (NGOs and donors) in the district.
   – A platform for information sharing among development stakeholders through utilization of Business Development Service (BDS) shops premises and various literatures available at those shops.
   – An advocacy platform - for actors to raise and voice their concerns about development issues that affected them (e.g. the district business council; ethnic and religious minority groups).
   – A decision making forum – where stakeholders and disadvantaged groups feed information that influences development planning at district level (UNCDF, 2009).

The DFLE, being a non-political forum, plays a vital role for voicing up clusters' economic concerns at the district level. Its decisions find an entrance in the mandatory district decision making process via the Council Management Team (CMT). This CMT is a technical advisory team that sorts out economic issues and forwards them to respective statutory committees, after which they are forwarded to the Full Council meeting. In case of major economic plans, the District Consultative Committee comes into action. Feedback to the community level follows the same path in the reversed direction (UNCDF, 2009).

The total number of members of the DFLE of Sengerema District is 41. The DFLE consists of two groups:
   1) Two representative members of each of the thirteen clusters, which are democratically elected by the respective group.
   2) Fifteen representatives from other stakeholders, such as the Local Government Authority (LGA), the Tanzania Revenue Authority (TRA), the Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA), Councillors and Sengerema residents residing outside the district.

Table V: The thirteen clusters of the District Forum for Local Economy

Agriculture	Livestock	Milk processing
Savings and Credits Cooperatives Societies (SACCOS)	Small industries and small business	Crafts
		Timber and Carpentry
Welding	Millers	Youth
Women	Fishing	Religion

The DFLE is chaired by the chairperson of Sengerema District. Secretary of the DFLE is the District Executive Director. In this way, conflicting interests between the district and the DFLE are minimized. On the other hand may one question the desirability of this absorption of power by so few different persons. The power of the chairperson of the district to influence processes becomes even larger in this way. The executive arms of the DFLE is the Coordinating Committee (CC). This committee comprises of five members including a chair person, a vice chair person and a secretary. The role of the coordinating committee is:
- to scrutinize proposals from members of the forum
- to receive reports from stakeholders
- to monitor and evaluate projects from MSMEs and socio-economic groups
- to manage loan recovery
- to solicit for funds and resources
- to investigate and if necessary get involved in any other relevant developmental issues

The DFLE meets four times a year on a quarterly basis; the coordinating committee meets every month and whenever need arises (UNCDF, 2009).

According to mister Kodjo Esseim Mensah-Abrampa, the Regional Technical Adviser of the UNCDF and editor of the report on DFLE, constraints and challenges for the DFLE in its current shape are
- According to a survey among 246 respondents only 53% admit that the DFLE formation was democratic.
- Only 41% consider the number of cluster representatives to be representative; one or two cluster representatives appears to be not effective enough because of the large geographical areas of the district. In this way, the majority of the clusters will not be met timely to share the agreements from the forum.
- Funding for the DFLE meetings is a problem.
- The cluster representatives have to cover large geographical areas and often lack reliable transport. This results in the fact that DFLE representatives cannot visit all their cluster members.
- DFLE representation is not yet sufficient. There are shortcomings in informing the communities. Second, the opportunities for the communities to voice up their economic needs are too limited. This problem is as well related to the large geographical areas representatives have to cover.
- The DFLE is gender-biased: only four of twenty-six cluster-representatives are women.
- The double roles for the District Council Chairman and the District Executive Director may lead to the negative fact that the DFLE's decisions may not be independent from the Councils ties.

In short can be concluded that the concept of the District Forum for Local Economy is promising. In practice, the DFLE has not yet reached its full ability; there is some room for improvements. One of the current weaknesses is the virtual and often also real distance to the communities. Some adjustments are needed in order to get the rural community informed and as a result participating in their region's development. A long-term solution might be decentralization of the DFLE to ward level (UNCDF, 2009).

4.5.4 | Donors

In the past, donors have played an important role in construction of water supply facilities in Sengerema District. They are still present, and they might play an important role in the implementation of recommendations of this research too.
In the year 2010, the Sengerema District Council has received funds from the African Development Bank, from the Japan International Cooperation Agency (JICA) and from the World Bank, via the Ministry of Water. These funds were earmarked for rehabilitation and construction of water schemes in the District (SDC, 2010). Kawa and Makundi (2007) concluded that the many development actors – donors, development agencies, NGOs, and CBOs – function uncoordinated.
JICA's Project for Rural Water Supply in Mwanza Region consists among others of the drilling of 23 boreholes in five villages in Sengerema District (SDC, 2010; MWI, 2009).

4.6 | The host organisation

SNV Netherlands Development Organization is a Dutch organisation, funded by the Ministry of Foreign Affairs of the Netherlands. SNV focuses on capacity development to its clients. SNV's clients are national and local actors within government, the private sector, or civil society. The purposes of investments in capacity building are improvement of people's access to basic services and an increase of people's income and employment opportunities. The organization is active in 36 developing countries around the world.

In Tanzania, SNV has a head office in Dar es Salaam and several regional offices, of which the Lake Zone office in Mwanza is one (SNV, 2011). SNV is active in Tanzania's rural water sector, which has a.o. resulted in improvement of the functionality of existing water points, through water point mapping. Besides, SNV has supported school water, sanitation and hygiene activities, as well as capacity building in Integrated Water Resources Management (IWRM) (MWI, 2009). SNV is involved in the improvement of the water sector on the national level as well, by means of its membership of the earlier mentioned Supervision Missions of the Water Sector Development Program (Ueda et al., 2010).

Before this research, SNV was not yet present and active in Sengerema District. This research could be seen as a pioneering activity for SNV. On the basis of the preliminary results of this research in May 2010, SNV has decided to get involved in the support of community management of water in Sengerema District.

5 | METHODOLOGY

The previous chapters discussed the *Thematic Context*, the *Theoretical Framework* and the *Regional Context* of this research. In these chapters, more is explained concerning the serious shortage of clean and safe water in many areas in the world, of which Sengerema District in Tanzania is one. As well, community management – which is one of the possible institutional models for provision of water in rural areas, and the prescribed model by the law of Tanzania – is reviewed. Although some research has been conducted on community management, the topic is still surrounded with uncertainty. The massive introduction of community management in many areas in the world has made clear that, in its current form it is not the panacea the rural underdeveloped and water-scarce areas of the world were hoping for.

This research is necessary to map the current situation in Sengerema District, and to provide the stakeholders involved in water with recommendations for improvement. This chapter can be seen as the manual that was used by the researcher. It starts with stating the objective, main question, and sub questions. Second, the 'map' of the research will be drawn, by the conceptual model and the operationalization of its concepts. The methods that were used are described in the third part of this chapter. The Methodology will conclude with some attention for the limitations and reliability of this research.

5.1 | Research Objective & Questions

According to Neuman (2000, in: Vo, 2007), different scholars conduct social research for different reasons:
  – they do research in order to answer practical questions,
  – they want to ascertain the effectiveness of existing systems,
  – they want to describe something in real life and explain the changes,
  – they want to explore new knowledge about things in the real world.

The main reason for this research was the desire to find solutions for existing problems, and to contribute to the improvement of the provision of water in Sengerema District. However, there are some other reasons as well. Although this research is conducted in one specific district in Tanzania, the model of community management is a phenomenon that is used in the whole country of Tanzania and in many other countries in the world. Some of the recommendations that are provided to the District Water Department of Sengerema, might be of interest for scholars, development workers, and government officials in other areas of the world as well. This research might give some insight in the (lack of) effectiveness of the existing system of support to communities. And last but not least, the description of phenomena seen in Sengerema District might be one little brick in the enormous building of academic literature on development.

Both academic literature (Nkongo, 2009) and the figures of water supply in Sengerema District (GeoDataConsultants, 2008) give reason to suspect that the Water User Groups, appointed by the communities, are not able to manage the communities' water themselves. The objective of this research is therefore

> to investigate what kind of support Water User Groups currently receive, to explore what kind of support is needed in order to make their water supply sustainable, and to make recommendations on how support to Water User Groups can be improved.

Research objectives and questions are related to each other. Blaikie (2003) has provided a table in which he shows how research objectives automatically result in research questions of a specific kind. The first part of the objective gears at description. The second part shows a purpose of exploration and understanding of the situation. The last part of the research objective strives for improvement of the situation, and therefore belongs to the category of Intervention.

Table VI: Research Questions and Objectives

	Research Questions		
Research objectives	*What?*	*Why?*	*How?*
Exploration	✓		
Description	✓		
Explanation		✓	
Understanding		✓	
Prediction	✓		
Intervention			✓
Evaluation	✓	✓	
Assess Impacts	✓	✓	

(Blaikie, 2003)

The first two parts of the research objective – description, exploration, understanding – are necessary steps that has to be taken before one can say something about the last part – the intervention. Although description, exploration and understanding could be research objectives on their own, this is not the case in this research. Here, the final purpose is to make some recommendations to the stakeholders on how to improve the support to Water User Groups.
As a consequence, the main question this research attempts to answer is

> *How can support to Water User Groups be organized in a sustainable manner?*

The first and second part of the research objective will be handled in the sub questions. In the end, all of the answers to the sub questions are expected to contribute to the answer to the main question.

The research objective makes that a pragmatic three-step approach is very useful for this research, namely 'where are we now?', 'where we do we want to go?', and 'how will we get there?'.
First, the current situation – where are we now? - is described. In the chapters on the *Thematic Context* and the *Regional Context*, some general figures about the country and the region are already discussed. However, more insight in the local situation has to be obtained through the methods of this research – interviews with stakeholders, semi-structured interviews, and personal observations. Second, the situation that is strived for is discussed, based on the theory of community management as well as on the goals that are set by the Tanzanian government[10]. The third step is the main challenge of this research: the investigation of the route from the current situation to the desirable situation.

The sub questions are formulated around this trichotomy.

First, the current situation has to be mapped.

> *1) What are the figures of water supply in Sengerema District?*

> *2) Who are the (potential) supportive organizations?*

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10 In this research, the targets that are set by the government are used as a guide. Although such targets always can be questioned, the researcher found it appropriate to pass by the side way of debating the accuracy of these targets.

Who are the ones involved, and how do they relate to each other?

3) What is the current support the Water User Groups receive?

4) What are other local, specific factors that should be taken into account?

There are many factors that could have a significant or just a little influence on the process. Overseeing one of them might result in incorrect conclusions and unexpected incidents during the implementation of the recommendations of this research.

Factors that will be investigated are
- Ownership of the Water User Groups
- Transparency in the communication from the government to the communities
- Relations of accountability within the government, and from government to communities
- Poor accessibility of spare parts
- Cost recovery of water points

In the second part, the situation that comes into existence when the support is organized in an ideal and sustainable manner will be described.

5) What is, considering the theory on community management and the targets that are set by the government of Tanzania, the situation that is strived for?

6) What is meant by the concept 'sustainable' in this particular context and how could it be translated into a practical framework?

The third part is of course the most important, because it describes and designs the path that should be taken to get from the current to the ideal situation.
In general, with an assignment to organize a certain situation in an ideal and sustainable manner, one would ask oneself, again, several questions.

7) What is necessary to reach the desired situation, as described in the sub questions 5 and 6?

It is of great interest to discover the view of the main beneficiaries and key stakeholders, the Water User Groups. What do they consider to be necessary in order to make their water supply sustainable?
Besides, what do other stakeholders and experts perceive as indispensable support?

8) What is needed from the several stakeholders in order to reach the desired situation?

First, it is necessary to find out if the communities have requested for support before, and to whom and with what result.
Then, of particular interest in this is the role of the government. What are the government's limitations in living up to its responsibilities as described in the law of Tanzania?
Another entity that has to be investigated is the District Forum for Local Economy. This multi-stakeholder forum is promising and rather unique in Sengerema District.
At last, are there other entities that have played or might play a role in the support to community management of water?

Figure E is a visual representation of the research, in which the main research question as well as several aspects from the sub questions are displayed.

Figure E: Visual representation of the research
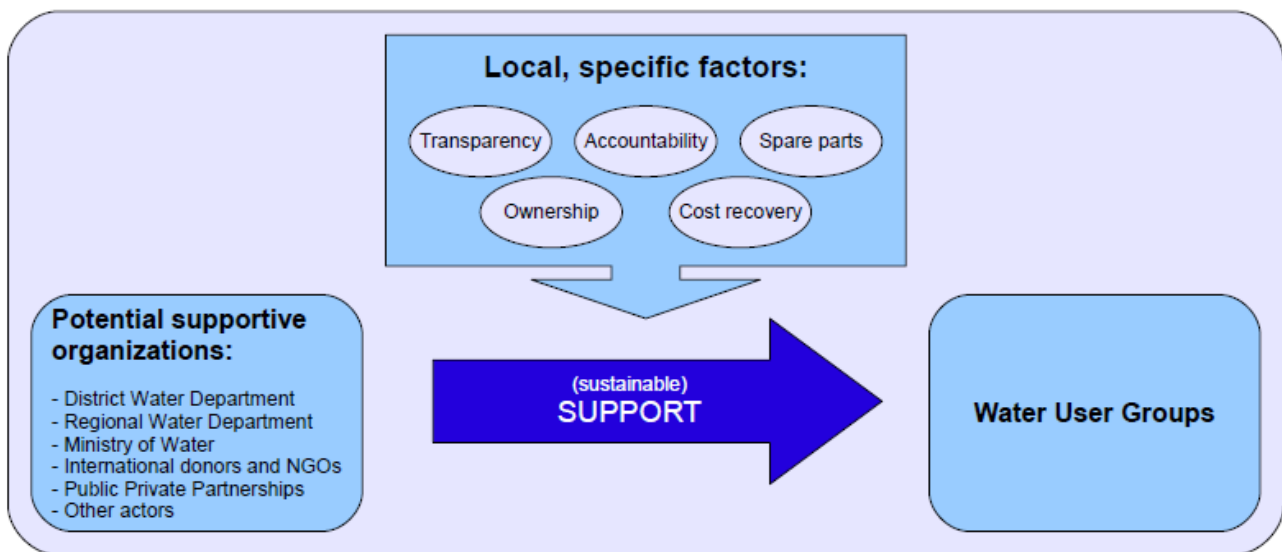
It is clearly visible that the main subject that is researched is the *Support* to the *Water User Groups*. It has become clear that *Water User Groups* are not capable of taking care of their water points without external *Support*. However, the kind of support WUGs receive will be investigated in this research. Likewise, in this research the *Potential supportive organizations* will be scrutinized. There are several *Local, specific factors* that have to be taken into account, as they might have significant influence on the other components of the model.

The trichotomy – where are we now, where do we want to go, how will we get there – that was mentioned before, can be applied to this conceptual model as well. One could consider the model as a representation of the current situation. The sub question on the current providers of support, the one on the current support Water User Groups receive, and the one on local specific actors, are displayed in the model. However, it is also possible to consider the model as representation of the situation in which support is organized in a sustainable manner.

Whereas *Figure E* only provides a graphic representation of the research, in the next sub section a model will be presented in which the situation that is researched will be displayed, including the key concepts of the research.

5.2 | Conceptual model and operationalization of concepts

The conceptual model is a visual interpretation of the key concepts and key actors of this research, together with their mutual relationships.

Figure F: Conceptual model
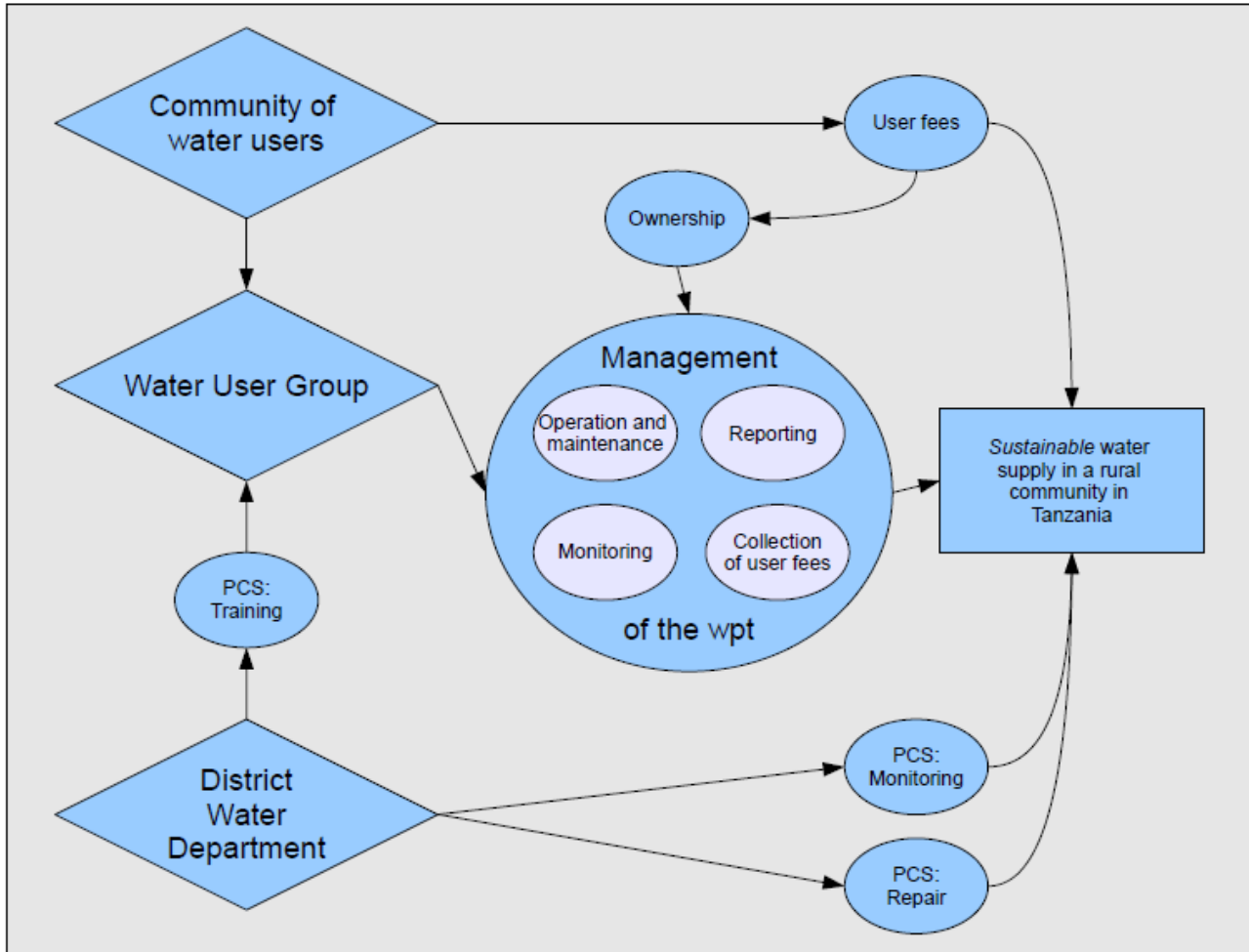
The dependent variable in this research is S*ustainable water supply in a rural community in Tanzania.* Sufficient levels of quality, such as safety and hygiene, and of quantity are considered part of sustainable water supply. The level of sustainability of the water supply in a rural community is influenced by many different factors.

There are three different actors in this model that influence the S*ustainable water supply in a rural community in Tanzania*. These are the *Community of water users*, the *Water User Group*, and the *District Water Department*.

The *Community of water users* is the population of the village or neighbourhood that gets its water from the water point. Their *user fees* lead to financial sustainability, because they are used for operation and maintenance and incidental repairs. In practice, *user fees* are often in the form of a small fee per bucket of water (10 or 20 Tshilling / € 0,005 or € 0,01), or a monthly contribution.

The *Water User Group* is the key-entity in the model of sustainability. The *Water User Group* is a committee that is usually elected by the *Community of water users*. It has the responsibility for *Management of the water point.* Its responsibilities are *Collection of user fees*, *Operation and Maintenance*, *Monitoring*, and *Reporting*. The *Water User Group* collects the money from the *Community of water users*, puts the money

on their bank account, and is responsible for proper and trustworthy bookkeeping. The *Water User Group* cleans the water point and takes care of minor repairs (*Operation and Maintenance*), *monitors* on a regular basis if the pump is functioning well, and *reports* to the local government and/or the *District Water Department* in case there is something wrong.

The third entity is the *District Water Department*. Whereas in the past the *District Water Department* was responsible for construction of the water points, nowadays they have the responsibility of providing *Post-construction support (PCS)* to the *Water User Groups*, who are the managers of the *community's* water points. Investments – i.e. *training* - in the *Water User Groups* are expected to benefit eventually the whole community of water users. Besides, the DWD does some regular *monitoring* of the water points and carries out major *repairs*.

Lastly, the concept *Ownership*[11] is considered to be crucial for sustainability of community management of water. It is expected that regular contribution of *User fees* leads to an increase of *Ownership* of the *Water User Groups* as well as of the *Communities of water users*. Besides, it has a positive impact on the managerial performance of the *Water User Group*.

5.3 | Methods

Whereas there has been done a lot of research on community management, not so much is known about the support communities need in order to manage their own water supply systems in a sustainable way. Because the supportive relationship between the local government or other entities and the communities is considered a gap in current academic literature on community management, the researcher has chosen for an exploratory, qualitative approach. A situation in which little is known about the research topic does not suit a quantitative research approach in which a few clearly defined statements are tested in a large sample. The intention of the researcher is that both the communities as well as the supportive organizations – government, NGOs, and Public Private Partnerships – will benefit from this research. By combining 1) the view of the communities on their own needs with 2) the view of the organizations that are responsible for support and 3) the view of relatively neutral experts, this research aims to contribute to the organization of support to communities concerning their water supply. Clear recommendations will be offered to the communities, the district government of Sengerema, and the international NGO SNV Netherlands Development Organization.

Although community management is used in many different areas within and outside Tanzania, this research will focus on one particular district. The researcher considered it better to conduct a qualitative, small-scale research in which he could investigate the subject in-depth, than to organize a large-scale but superficial multi-district research.

The researcher spend thirteen weeks in the research area. Because of the exploratory, qualitative character of the research, the use of different research methods was expected to contribute mostly to the research. The researcher chose for a process approach, in which he would be able to adapt the methodology during the research period. This turned out to be in particular useful in the designing of the semi-structured interviews, and the selection of key informants for the other interviews.

5.3.1 | Semi-structured group interviews with Water User Groups

On the level of communities, it was considered most appropriate to conduct semi-structured group interviews with the Water User Groups in Sengerema's villages. Semi-structured interviews are considered as a proper means to obtain factual information, as well as ideas and feelings that are not written down (Willis, 2006). Seven weeks were used for the semi-structured interviews with the WUGs.

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11 An important remark has to be made on the in this research often used term '(a feeling of) ownership'. Some confusion might arise, as this term could refer to (a feeling of) ownership of the Water User Groups or to (a feeling of) ownership of the communities in general. This research focuses on the Water User Groups, while the communities are merely ignored. Therefore, usually when the term ownership is used without further explanation, it refers to (a feeling of) ownership of the Water User Groups.

Water User Groups
Of the 348 water points in Sengerema District, about 221 are officially managed by means of community management (GeodataConsultants, 2008). In practice, this means that a Water User Group is installed and appointed to manage the water point. In the research, thirty semi-structured interviews were conducted with (representatives of) the Water User Groups. This is 14% of the total number of Water User Groups.

The WUGs are responsible for the water point, so they are considered to be most aware of the issues surrounding community management of rural water supply. Although they are officially appointed to maintain the contact with the District Water Department, they have no formal linkages with the government. In order to investigate the supportive role of the government, it is important to speak to people who feel free to describe the real situation.

The prescribed composition of a Water User Group in Sengerema District is six men and six women. About half of the visited Water User Groups consisted of this prescribed composition. The other half usually had a bit less members. Gender equality is ensured in more than two-thirds of the groups. The groups consisted of people of ages between 20 and 70 years old. Most groups were relatively mixed in age.

In the villages in Sengerema District, people who had sufficient knowledge of the English language were exceptional. Therefore, an interpreter was hired to translate all the interviews from English to Swahili and vice versa. In one interview, it was even necessary for some of the interviewees to translate it from Tanzania's national language Swahili to their tribal language, because otherwise they were not able to fully understand what was asked. Aware of the fact that the translator played a crucial role in the data-collection, the researcher deliberately invested a lot of time in the translator to be sure that he would understand what the research was all about.

Selection of Water User Groups for interviews
The sampling frame in this research consisted of 221 Water User Groups, unequally divided over the 25 wards of Sengerema District. A stratified random sample was used, which means that several strata were purposefully selected, but that the Water User Groups within these strata were selected randomly.

After investigation of the resources for transport of technicians of the District Water Department, the researcher could imagine that Water User Groups that were far away from Sengerema Town might receive not so much support as the WUGs that were located more close to the District Water Department. Therefore, the first stratum consisted of four wards that were located far away from Sengerema Town (Bupandwamhela, Kafunzo, Katwe, Maisome), while four wards close to the District Water Department (Sengerema, Sima, Tabaruka, Nyamazugo) together formed the second stratum.

Sengerema District can be divided into a relatively wet and a more dry part, and the tarmac road from Mwanza via Sengerema Town to Geita is considered to be a rough division line between the two parts. Water supply issues might vary significantly between wet and dry areas, and therefore is decided that the third stratum has to consist of relatively wet wards (Nyakasungwa, Nyakaliro, Nyamatongo, Katunguru) and the fourth stratum of relatively dry wards (Kagunga, Buyagu, Igalula, Buzilasoga).

Out of the water point mapping research that was conducted in 2007 (GeoDataConsultants, 2008) some conclusions can be drawn (*Appendix IV: Performance in full water point coverage per ward*). Based on their figures, a clear distinction can be made between 'well-performing' and 'poorly performing' wards. In this case, 'well-performing' means a relatively high full water point coverage[12], whereas 'poorly performing' means a low full water point coverage. It is of course very interesting to find out whether there is a relation between the performance of a certain ward and the kind of support the ward receives from the government. In order to find out, the researcher decided that the fifth stratum of this research should consist of a well-performing ward (Kalebezo), the sixth stratum of an average performing ward (Nyehunge), and the seventh stratum of a poorly performing ward (Chifunfu). From the 25 wards of Sengerema, 19 are visited for an interview. Within the different strata, the Water User Groups that were to be interviewed were randomly selected. However, it has to be remarked here that the researcher eliminated the water

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12 'Full waterpoint coverage' is the number of functional waterpoints divided by the population times 250. According to the National Water Policy, full coverage equates one water point per 250 people (MWLD, 2002).

points that were reported to be broken before 2005 from the sample frame. It is probably very difficult if not impossible to find and bring together the Water User Groups of water points that are broken for more than five years. What is more, they would not be able to provide actual information about the support they have received from the government.

The stratified random sample resulted in the following list of Water User Groups that were planned to visit.

Table VII: Sample for Semi-Structured Interviews with Water User Groups

Ward	Village	Water point
Sengerema	Ibisabageni	Kwa Dominiko
Sima	Sima	Four water points (Kwa Msomi, Nigumba, Majengo, Kwa Nuga)
Sima	Sogoso	Kwa Majebele
Buzilasoga	Buzilasoga	Buzilasoga Dam
Nyamazugo	Nyamizeze	School
Nyamazugo	Nyamizeze	Senga
Nyamazugo	Nyamizeze	Shuleni
Katwe	Kasheka	Centre A
Katwe	Katwe	Tegeo
Bupandwamhela	Itulabusiga	Kwa Masato
Bupandwamhela	Bupandwamhela	Kwa Uwandjani
Kafunzo	Bilulumo	Kibinda
Buyagu	Buyagu	Kwa Dundo
Buyagu	Buyagu	Kwa Lugembe
Igalula	Ngoma A	Kwa HESAWA
Kagunga	Nyanchenche	Borehole Centre
Nyakaliro	Itumbili	Lugasa HESAWA
Nyakasungwa	Nyakasungwa	Two water points (Kwa Mganga, Kwa Majengo)
Kalebezo	Busekeseke	HESAWA / Shuleni
Kalebezo	Kalebezo	Kwa Amri
Nyehunge	Kayehenze	Fidika na HESAWA
Nyehunge	Nyehunge	Bukiriguro / Kwa Kumbo
Chifunfu	Lugongo	Kwa Bilali
Chifunfu	Nyamahona	HESAWA
Tabaruka	Kishinda	Zahanati
Nyamatongo	Ngoma B	Kasubuya
Nyamatongo	Nyamatongo	Magutu
Katunguru	Kasomeko	Kwa Paulo Yacobo
Katunguru	Nyamtelela	Kwa Felecian
Maisome	Kanoni	-

Appendix V: Map of Sengerema District, including the names of the wards presents a visual display of the district.

Appointments for the interviews

The researcher's host organization in Tanzania, SNV Netherlands Development Organization – Lake Zone Portfolio, has officially requested the District Executive Director of Sengerema District to grant all the necessary support to the researcher. Therefore, after designing the sample for the semi-structured interviews, the researcher asked the District Water Engineer to provide the names and telephone numbers of the chairmen of the selected Water User Groups. The District Water Engineer honestly explained that, although the District Water Department was officially responsible for support to all these Water User Groups, he did not possess any names and contact information of the members of Water User Groups. Likewise, the names and telephone numbers of the Village Executive Officers could not be provided at the District Government. It appeared to become an insurmountable challenge to contact the Water User Groups in order to make appointments for the semi-structured interviews. However, the District Water Engineer was very helpful, and demonstrated that in a development context some things are arranged in a different way. One of the water technicians was send on a motorcycle to all the villages, and warned the Water User Groups that the next day a researcher would come to interview them.

Semi-structured

In order to obtain more information, the research was qualitative, not quantitative. The fact that it was semi-structured made it possible to investigate a certain issue more in-depth when it appeared to be relevant. Besides, it enabled the interviewer to cross-check the answers that were given. This was a valuable advantage, because interviewees might have the intention to give answers they expect to be most helpful for their situation.

The interviews covered several topics, such as the functionality of the water point; the involvement of the community in the design and planning phase, in the construction phase, and in operation and maintenance; problems the community experiences with the water point; the Water User Group; support that the WUG currently receives, and support that according to them is needed; and financial sustainability.

The interview questions can be found in *Appendix VI: Interview Questions*. The interview was slightly adjusted and improved during the interview phase.

Participatory

Although not deliberately planned on forehand, the semi-structured interviews with the Water User Groups turned out to be surprisingly participatory. In order to stay in control of the process, the interviewer decided to divide a meeting with the Water User Groups in two parts. The first part, in which the interview was conducted and the questions of the interviewer were answered, was rather formal. The second part was more informal, and there was space for the communities to ask questions to the interviewer and to the employee of the District Water Department who accompanied him, to discuss ideas for improvement with each other and with the interviewer, and to share what else they considered to be important for the research.

The outcomes of the semi-structured interviews with the Water User Groups give an insight in the current support that Water User Groups receive, in the support the WUGs desire, and in the contribution the WUGs can provide themselves.

5.3.2 | In-depth interviews with other stakeholders

Besides the semi-structured interviews with the Water User Groups, more in-depth interviews were held with several stakeholders, such as government officials from several departments and on several levels, an expert from a national and an international NGO, influential persons from the grassroots level and experts from the private sector.

In particular in the first two weeks of the research, the researcher spend some time on so-called 'institutional mapping' and 'personal mapping'. Organizations that had to do with water supply, government departments, local and international NGOs, Public Private Partnerships, and international organizations were 'mapped' as soon as possible. The key persons within these organizations were mapped as well,

together with their contact details. In this way, the researcher build his own little database, which enabled him to oversee which players were present in his research field, and how they were related to each other.

Some of the interviews with stakeholders were conducted before starting the series of semi-structured interviews with the Water User Groups, so that they could help in designing the format of the semi-structured interview. Others were conducted during and after the series of semi-structured interviews, which made them very relevant to give back and discuss the results that came up in the interviews on the grassroots level.

In total, sixteen experts were interviewed, as is shown in *Appendix I: List of people consulted*. Some of them – Mr. Maganga, Mr. Shigulu, Mr. Malisa, and Mr. Van Klinken, played an important role in the research and were consulted several times during the whole process.

The in-depth interviews were very helpful in order to understand the broader picture and to investigate the situation from different angles. Next to that, it appeared that conducting interviews with all these stakeholders helped also to put the issues of community management of water on the agenda. It raised awareness, and sometimes to the surprise of the researcher, triggered the interviewees to come into action as well.

5.3.3 | Personal observations

Personal observations should not be underestimated, in particular in the exploratory phase of the research. Attending meetings, shaking hands with stakeholders, experiencing the lack of sufficient water yourself, walking around at the government area as well as in the villages, bringing a visit to several water systems, chatting informally with people who live in the District for many years... all these little, at first sight not so scientifically experiences definitely play a role in 'mapping' the situation in which the researcher has to do his job.

In order to understand more of the situation of water in the district, the researcher visited the Nyamazugo intake, the abandoned Sengerema Dam, and the Sengerema Water and Sewerage Authority. An old Catholic brother showed him around on a "water-sightseeing tour" throughout Sengerema town, meanwhile sharing many stories about former investments in the water sector by the government and NGOs, the difference between the wet and dry season, the political situation, corruption, and theft of water pumps.

The celebration of World Water Day on March 22, 2010, also provided useful information about the manner in which the government tries to inform and mobilize the communities about the relation between health, water and economic development.

At last, presence at several meetings of government officials helped to understand some of the politics, to get to know important stakeholders, as well as to draw attention to this research that would be carried out in their district.

5.3.4 | Presentation of findings

The last way in which the researcher was able to give something back to his research area, was by presenting his findings to stakeholders on different levels.

Halfway the research, a meeting with presentation and discussion was organized at SNV's office in Mwanza, for which several stakeholders were invited.

In the last phase of the research, the researcher wanted to maximize the impact of his research, and therefore his findings were presented to the District Water Department, the District Committee of Education, Health, and Water, the Full District Council (including press attendance) and the in the area active development organization SNV.

Besides the presentations, all relevant stakeholders as well as the representatives of the wards were provided a report containing the conclusions of the research and recommendations for specific stakeholders. A copy of the report is attached in *Appendix III: Report provided to stakeholders and representatives of the wards*.

5.4 | Limitations and reliability

Semi-Structured Interviews
It has to be mentioned that although every village executive officer was asked to bring only the (maximum) twelve members of the Water User Group together for the interview, sometimes many other villagers were attending the meeting as well. The interviewer considered the benefits (awareness raising on the issue of water management and involvement of the community) larger than the costs, and decided to adjust to this change.

The District Water Department provided its Toyota Landcruiser, a driver, and a water technician for the interviews with the Water User Groups. At every interview, besides the researcher and his research assistant / translator, a water technician from the District Water Department was present. The risk is obvious: because of the presence of a government official, the interviewees might feel not free to say what they want, and how they really feel about the support they receive from the government. The researcher evaluated this together with his independent research assistant, and concluded that the presence of a government official had no negative influence on the space experienced by the interviewees to express their views. In at least one case, the presence of a government official appeared to evoke even more negative feelings, and without hesitating the interviewees summed up all their complaints against the District Water Department.

From the beginning the researcher was very aware of several biases that can hinder proper scientific research in a development context. The famous tarmac-road bias, which stands for the pitfall that a researcher might prefer to conduct interviews in villages that are easily reachable, was deliberately prevented by selecting the villages randomly. Even the Toyota Landcruiser that was available to us had a hard time reaching some remote villages.
Of the originally selected villages, one (Lubungo dam, in Lubungo in Igalula Ward) turned out to be not reachable because of heavy rainfall. This village is usually more or less isolated from the outside world during the rainy season.
The island Maisome in Sengerema District is very difficult to reach. Although it falls under the government's responsibility, the District Water Department does not provide any support to the citizens of the island. In order to find out what the situation was on the island, the researcher interviewed the representative of Maisome.

General limitations
The relatively small number (30) of semi-structured group interviews results in the fact that one has to be very cautious with generalization of the conclusions of this research. The fact that the researcher has chosen for a qualitative research with thirty semi-structured group interviews and in-depth interviews with sixteen experts made it possible to reveal the underlying reasons for the facts and figures as presented, as well as for understanding the broader context in which community management in Sengerema District takes place. However, it is recommended to conduct a large-scale, quantitative research to cross-check and validate the findings of this research.

6 | ANALYSIS

In this chapter the information that was gathered by means of the several methods that were applied, is presented, discussed and analysed. In order to provide the reader with a clear overview, the researcher has divided the chapter in several sub sections, that correspond to the sub research questions. In each sub chapter, the information that is gathered in the literature, in the semi-structured interviews, and in the in-depth interviews will be compared. Together this will draw a more complete picture of the situation and answer the research questions.

6.1 | What are the figures of water supply in Sengerema District?

According to the official figures of the District Government of Sengerema, 56% of its population of 635.803 persons[13] has access to clean and safe water in 2010; 278.703 persons lack access to clean and safe water (SDC, 2010). This does not mean that they have no access to water at all, but it does mean that the water they use might be unsafe and unclean.

In 2007, a water point mapping study has been carried out in Sengerema District (GeodataConsultants, 2008). The researchers found that there were 348 water points in this District. Of these water points, 174 were non-functional. This is confirmed by the District Water Engineer, who declares that of the shallow wells that are constructed by HESAWA, less than 50% is functional at the moment.

After combining these figures, one can conclude that on average 1827 persons have to share one water point In case only the functional water points are counted – which logically gives a more relevant figure -, the situation is even worse. In Sengerema District, there is one functional water point per 3654 persons[14].

In the semi-structured group interviews, the Water User Groups were asked how many households and how many people were dependent on their water point According to them, their water points had to serve on average 326 households, which equals 1731 people. Numbers like these, whether they are realistic or a bit too high, explain that many of the Water User Groups were complaining about shortages of water and very long queues at their water point

In this research 14% of the water points that are managed by a Water User Group are visited for a semi-structured interview. Although the statistics gathered in thirty interviews are not sufficient for quantitative analysis, some rough conclusions can be drawn.

In the district, the majority of water points are shallow wells, which are two meters to thirty meters deep. In the sample this was confirmed, as 21 of the 30 interviews were held with a Water User Group responsible for a shallow well.

Of the 30 water points, 70% was functional. It has to be mentioned that all water points that provide water in some way are classified as 'functional'[15]. The fact that the percentage of functional water points in the sample is much higher than the percentage in the study population is caused by the fact that Water User Groups from water points that are non-functional for more than five years are excluded from the research, as is explained in section *5.3.1 | Semi-structured group interviews with Water User Groups*.

On the question if they experienced any problems concerning their water supply, 29 out of 30 communities

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13 A population of 635.803 persons is the projection for 2009. The last census was in 2002.

14 These figures are averages, and can only be used as an illustration of the situation. There is no waterpoint were there is a daily queue of 3654 persons.
    Sengerema District is surrounded by Lake Victoria on three sides, so people living near the shore fetch the (unsafe) water directly from the lake. Others use so-called 'traditional sources', which are little fens and puddles. The water from these sources is often very unclean. At last, in Sengerema Town, there is a piped scheme which is used by part of the town's population.

15 Of many of the waterpoints in Sengerema District the pump is stolen. At some of these waterpoints, the water in the well is out of reach because of a large concrete cover. At other waterpoints, the people are able to reach the water by means of buckets on a rope. Because the waterpoints of this last category provide at least some water, they are classified as functional.

answered 'yes'. This shows that even the Water User Groups that were managing a functional water point, often have to deal with problems of different kinds.

Besides, two-thirds of the interviewed Water User Groups mention that they experience water shortages or have no water at all in the dry season. The underlying reason is that many shallow wells are not deep enough. The ground water level in Sengerema District is several meters lower in the dry season. Of the shallow wells that are dug in the wet season, many are as deep as the wet season level of the ground water requires. In many communities, the Water User Groups have set a quota on the number of buckets that are allowed to fetch per household per day.

Important to mention in this section as well is that according to the law of Tanzania, the Water User Groups[16] have to be registered, in order to become the legal owners of their water supply systems (WSSA, 2009). At the moment this research took place, not even one of all 223 Water User Groups in Sengerema District was officially registered.

6.2 | Who are the (potential) suppliers of water in Sengerema District?

The previous sub-section can easily be summarized in one sentence: with only a bit more than half of the 635.803 people in Sengerema District served with access to safe and clean water, there are some serious problems concerning water supply. In this section the organizations that are responsible are introduced and their contribution to the current situation is analysed.

6.2.1 | Water User Groups

Since the commissioning of the National Water Policy in 2002, the Water User Groups are the most important entities in rural water supply (MWLD, 2002). They are the owners of the water points in rural areas, and they are also responsible for the management of the water points

According to the District Water Engineer, as soon as a water point is constructed or rehabilitated, a Water User Group is installed. The research confirmed that a large majority of the water points is managed by a Water User Group[17]. In one case the water point belonged to the school and was managed by the managing board of the school. At two other water points, there has been a Water User Group in the past, but the members of that WUG have moved or passed away. Both communities did not install a new Water User Group, because they "did not know where to start".

The District Water Department prescribes a number of twelve members, containing six men and six women, for every Water User Group. In the research was found that 14 out of 30 Water User Groups had the prescribed number and gender division. Two-thirds of the interviewed Water User Groups were gender equal.

A Water User Group is responsible for operation and maintenance of its water point. During the semi-structured interviews, the following activities were summed up as components of a WUG's portfolio[18]:

- supervision during water fetching hours
- cleaning of the pump and the area / responsible for hygiene
- maintenance of the pump
- monitoring / inspection
- guarding (preventing animals from destructing the pump or polluting the area as well as protection of the pump against theft)

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16 In the Water Supply and Sanitation Act, 2009, the Water User Groups are called "Community Owned Water Supply Organisations (COWSO's)" (WSSA, 2009).

17 Not in all villages was the term 'Water User Group' used for the committee that was responsible for the waterpoint. Different names of the committees are the results of differences in policies over time and/or differences in policies from different donors. However, this difference in name appeared to have no influence on the activities and/or the performance of the committees.

18 This list of responsibilities of Water User Groups in Sengerema District corresponds with in literature mentioned lists of Water User Groups in other areas (IOB, 2007).

- building a fence in order to protect the water point
- informing and educating the community on hygiene, boiling water, etc.
- ensuring that the users keep the by-laws[19]
- ensuring an equal division of water among the villagers
- collection of user fees
- minor repair
- reporting problems to the village government or DWD

The majority of the Water User Groups were aware of their responsibilities, although they did not always carried them out properly. One of the Water User Groups claimed not to know what they had to do, because the District Water Department had never told them what to do. Consequently, this Water User Group did not carry out any of the mentioned activities. One of the other Water User Groups mentioned that its members have a monthly meeting in which they discuss the situation of water in their village, as well as their tasks, performance, and planned activities. In other cases, there was only a meeting in case of problems. Striking is the fact that none of the communities mentioned bookkeeping or the responsibility for a bank account as one of their tasks. This shows that communities are not at all aware of their responsibilities for financial management of their water point

One of the biggest problems with the Water User Groups is a widespread lack of ownership[20]. A clear example can be seen in the fact that although 29 of 30 interviewed Water User Groups experienced problems with their water point, less than half of them ever seriously requested for support. The communities consider their water supply as a governmental responsibility, and expect the District Water Department to construct, maintain, repair, replace, and extend their water supply systems. Because of the fact that rural Tanzanians are grown up in a strong socialist political atmosphere, with a government that promises to take care of everything and does not stimulate people's initiative, they are not used to stand up in order to actively influence their own practical situation[21].

Conclusively can be stated that the tasks the Water User Groups currently perform are easy, although in particular supervision and guarding is rather time-consuming. Water User Groups are occupied with 'minding the shop', and are not at all busy with finding ways to improve the situation. The current activities a Water User Group carries out are barely in line with the National Water Policy, which requires much more from them, in particular with regards to (financial) management and leadership.

6.2.2 | District Water Department

The District Water Department is responsible for the two piped schemes, the 15 machine drilled boreholes, the more than 180 shallow wells, and the several other water sources in the district.

According to the District Water Engineer, the main problem for the District Water Department is a lack of resources. Out of their budget, the DWD can afford four new boreholes per year. A poignant remark that has to be made is that the construction of new water points currently cannot keep up with the population growth. Four new boreholes can serve a four hundred households, which equals about 2600 persons. This is just a fraction of the current estimated population growth of 23.525 persons per year (3,7% of a current population of 635.803). Other problems are a lack of transport and a lack of human resources. The District

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19 Examples of bylaws are: children under a certain age (5, 10, 13 or 14 years old) are not allowed on the waterpoint area; people have to take of their shoes or sandals; people are not allowed to wash their clothes near the waterpoint; people have to fetch water within the predescribed time slots (often two hours in the morning and two hours in the afternoon); people are not allowed to fetch more buckets than a predescribed number, in particular in the dry season; people are not allowed to wash themselves near the waterpoint; people are not allowed to brush their teeth near the waterpoint; people have to stand in proper queues; people are not allowed to wash their buckets near the waterpoint; people are not allowed to wash their dishes near the waterpoint; people are not allowed to pee near the waterpoint; animals are prohibited in general.

20 This topic will be more elaborated on in sub-section *6.4.1 | Ownership of the Water User Groups.*

21 Although not scientifically substantiated, one of the insights that was mentioned during an interview is worth mentioning in this context: "You, European people, you consider life as something you can organize yourself. We Tanzanians consider life as something that happens to you".

Water Department has twenty-four employees, and is responsible for a district with 635.803 people living on a surface of 3.335 km² [22]. The DWD has one Toyota Landcruiser and three motorcycles available to cover this large area.

The interviews as well as the informal on-side observations of the researcher prove the earlier presumption that the District Water Department faces a serious lack of human resources. The number of employees is not a problem, but the level of education, the ability to work independently and the ability to bear responsibility of the current employees is a serious hindrance for good performance of the District Water Department. Of the twenty-four employees, only one (the District Water Engineer himself) has a bachelor's degree. Two others attended a technical college, four attended secondary school up to form 4, and as many as seventeen of the employees only attended primary school (SDC, 2010). Although some might claim that there is a shortage of staff at the District Water Department in general, the research shows that there is merely a lack of staff members in the field, but that there are plenty in the office. What is missing are staff members who are able to give advice and support on the management of a water point to the Water User Groups (e.g. bookkeeping, using an account), instead of only repairing simple problems and telling the communities that they should boil their water. Interviews with experts indicated that many government officials – not only at the District Water Department - are poorly qualified, inadequately trained, and inexperienced and have irrelevant or outdated background knowledge about their field of management.

The District Water Department makes use of a very flat organizational structure. All employees receive their orders directly from the Engineer, who is also the one they are directly accountable to. This means that the work is seriously disrupted by the frequent absence of the Engineer, caused by weekly, monthly and quarterly meetings at the district level and yearly meetings at the Ministry of Water in Dar es Salaam.

The big challenge for the District Water Department is, according to the District Water Engineer, to transport knowledge to the communities and to create ownership. Therefore, the focus of the District Water Department in its activities is on ownership and capacity. Education is seen as the key: the District Water Department has to attempt to make the people understand the concept of ownership. It is, however, questionable if education is a sufficient means for creating a feeling of ownership. As will be discussed in later sub sections, legal registration of the Water User Groups and cost recovery are considered as important for a Water User Group's feeling of ownership as well.

6.2.3 | Regional Water Department

As a result of the decentralization policies of the past two decades, the power, the freedom and the responsibilities of the District Water Department have severely increased, partly at the expense of the Regional Water Department. Nowadays, the District Water Departments communicate directly with the Ministry of Water. The role of the Regional Water Engineer towards the District Water Engineers is reduced to the role of an advisor. The districts can seek help at the RWD for all kinds of issues.

Besides, the Regional Water Engineer monitors the implementation of the year plans, the spending of the budgets, and he evaluates their progression. Since there is a direct linkage between District Water Departments and the Ministry of Water, it appears as if the Regional Water Engineer is a bit bypassed in the bureaucratic system of water supply, and plays a somewhat powerless role.

The Regional Water Engineer is located at the region's capital Mwanza, and has no direct linkage with the Water User Groups in the districts. It appears that the Regional Water Department is too far away in the chain and not powerful enough to play a significant role in the improvement of support to the Water User Groups in particular and of the rural water supply in general.

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22 Officially, the total surface of Sengerema District is 8.817 km², of which 5.482 km² is covered with water (Lake Victoria).

6.2.4 | Ministry of Water

The Ministry of Water is the first partner for international donors. Application for funds to donors has to be done by the Ministry, and not by the Regional Water Departments or the District Water Departments, let alone the communities themselves. The District Water Engineer and/or the District Executive Director can apply for funds to the Ministry.

Although the communities in Sengerema District do not have a direct connection to the Ministry of Water, it appears that they do benefit from the efforts of the Ministry. Currently, the Japanese International Cooperation Agency (JICA) is executing a rural water supply project in the area.

Besides its indirect efforts for the communities in applying for funds to international donors, the Ministry of Water has its own program as well. The National Rural Water Supply and Sanitation Program (NRWSSP) is working in twelve villages in the district, and educates the villagers and involves them in the design and planning of the new water points The objective of this program is that every village should have clean, safe and sufficient water in 2025. This is a national objective. The villages in this program have to contribute 5% of the project costs (SDC, 2010).

6.2.5 | International donors and NGOs

International donors and NGOs have played a very important role in the improvement of rural water supply in Sengerema District. More than 50% of the water points in the research is constructed by HESAWA, a programme based on a specific agreement between Tanzania and Sweden on cooperation concerning rural water supply, environmental sanitation, and health education (UNESCO, 2011). This figure corresponds with the water point mapping study, where HESAWA was found to be the major constructor of water points in the district over the past 26 years[23] (GeoDataConsultants, 2008). JICA is currently constructing 24 boreholes in several villages.

One of the problems with support from international donors is that their approach is often very top-down. Little or no involvement from the community at the beginning leads to little or no ownership of the community on the long term[24]. As one of the interviewed experts narrated about the water points constructed by HESAWA:

> "They (HESAWA) make plans, discuss them with the leaders, and declare: "we are going to make sure that you have access to safe water". The whole community started using the water point But: to whom does it belong? The community says: "it is not ours, it belongs to HESAWA". So, nobody takes care of the water point, and in case it breaks down, they say: "Look, the HESAWA-pump is not working". And then they wait and do nothing, until somebody comes to repair it. But HESAWA is back to Sweden, so there is nobody to repair it".

The fact that international donors are only present for a short time has a severe impact on the sustainability of the work they do.

6.2.6 | Public Private Partnerships

Sengerema District is in the unique position that it is one of the two districts in the country were a District Forum for Local Economy (DFLE) is installed. The DFLE is a Public Private Partnership, in which district government officials, private sector representatives and representatives from the society are brought together.

Within the DFLE, thirteen clusters[25] are brought together. Rural water supply is not one of the clusters, and because of that it is not high on the agenda of the DFLE. The fact that many of the members of the DFLE do not consider water as an economic good makes it even more unlikely that the forum will play an active role in direct support to the Water User Groups.

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23 Striking is the fact that the international donor HESAWA constructed more waterpoints than the District Water Department itself (GeoDataConsultants, 2008).

24 This topic will be more elaborated on in sub-section *6.4.1 | Ownership of the Water User Groups.*

25 The clusters are Agriculture; Livestock; Milk processing; Millers; Crafts; Small industries and small business; Welding; Savings and Credits Cooperative Societies (SACCOS); Youth; Women; Fishing; Timber and carpentry; Religion.

During the initial desk study on the DFLE, one of the hypotheses was that this multi-actor forum could play the role of a watchdog at the district government. It was expected that the DFLE would remind the government to its promises, and would put some pressure - possibly in cooperation with the press – in case obligations were not carried out. However, from the interviews with DFLE-members and government officials the conclusion can be drawn that the DFLE does not considers itself as a watchdog. Instead thereof, the cooperation with the government is very smooth. In this more cooperating role, the DFLE is slightly able to influence improvement of basic services.

A strong point, however, is that DFLE's members from the grassroots face the problems themselves; they are aware of the hardships of the average citizen of Sengerema District.

The semi-structured group interviews showed that in twenty-five of the thirty Water User Groups that were interviewed, nobody had ever heard of the District Forum for Local Economy.

6.2.7 | Other actors

As mentioned before, possibly due to Tanzania's strong socialist government policies, many communities are not used to stand up and organize their own water supply: they are dependent on outside support. Notable is the fact that, when these communities are not properly served by their own government and out of sight of an international donor, there is one entity that might fill the gap that is left. This entity is the church. Maisome Island for example, one of the two islands that belong to Sengerema District, is not served by the District Water Department. The DWD is not aware of the situation on the island, and although they have heard that there are three pumps, the technicians never go to the island for monitoring, training or repair. The Roman Catholic Church has constructed three water points on the island, in order to serve the people there, who frequently suffer from water-borne diseases. In another village, the water pointtt is constructed by the Kanisa la Kiinjili la Kilutheri Tanzania (KKKT), the Evangelical Lutheran Church in Tanzania. In the previous sub sections on (potential) suppliers of water in Sengerema District, the reader might have missed any attention for the private sector. In other, more urban areas in Tanzania, the private sector was interested in filling the gap that was left by the government (Arseniuk, 2010). However, in an area as sparsely populated as Sengerema District, with little villages scattered over a relatively large territory, the unit costs are high and the demand side is relatively small. Besides, because of the widespread poverty, the potential consumers are economically not very interesting. As a result, there are hardly any private initiatives visible in Sengerema District's rural water supply.

6.3 | What is the current support the Water User Groups receive?

In the previous sub-section *6.2 | Who are the (potential) suppliers of water in Sengerema District?* the (potential) supportive organizations were introduced and discussed. This sub-section is about the kind of support the communities currently receive. Differentiation within the data set has proven to be very useful, as it provides some insights in differences between a.o. those Water User Groups that received support and those who did not, as well as differences between different areas within the district.
With the introduction of the National Water Policy in 2002, the government officially shifted the responsibility and ownership of rural water supply from the government to the communities (MWLD, 2002). Since, communities are the official owners of their water point, and they are also responsible for it. In practice, it turns out that communities are not able to manage their own water supply, as long as they don't get support.
Where in the past the Local Government Authority was the one and only responsible authority for water supply in the district, since 2002 the District Water Department has "changed its role from being an implementer to a regulator, facilitator and coordinator" (MWLD, 2002). This leads in practice to the following responsibilities:
- In order to ensure that the communities are the legal owners of their water supply schemes, legal registration of the Water User Groups is necessary. The District Water Department is responsible for the organizational process of registration.

- The District Water Department has to facilitate the Water User Groups in acquiring technical and management skills.
- The District Water Department has to educate and facilitate the Water User Groups to manage operations and to meet the operation costs including that of scheme improvements.
- The District Water Department has to provide technical and financial support for the construction of new schemes, and expansion or rehabilitation of existing schemes (MWLD, 2002).

6.3.1 | Findings for all Water User Groups

Of all 223 Water User Groups, not even one has been registered until now. The District Water Department as well as the District Legal Officer were barely aware of the obligation of registration of the Water User Groups. The Water User Groups themselves are not at all aware of the legal necessity of registration.

In order to provide the Water User Groups with technical and management skills, the District Water Department has organized trainings for the Water User Groups. However, of the interviewed Water User Groups, only seventeen declared to be trained. In most cases, this happened only at the beginning, and there was no proper follow-up or monitoring. In general, a Water User Group is replaced every three or five years. The newly installed Water User Groups do not receive training, so they start unprepared with their jobs. The trainings the Water User Groups received were focused on the technical aspects of managing a water point, such as cleaning, maintenance, and minor repairs. The financial part of management, which contains collecting money, bookkeeping, opening a bank account, and financial reporting, is totally neglected in the training. In the same way as it is neglected in the training, it is neglected in the management of the communities, leading to many problems on the topic of cost recovery and financial sustainability.

The District Water Department itself is able to construct four new boreholes yearly out of its budget. This is just a fraction of what is necessary. Of all the responsibilities of the District Water Department, the provision of financial support to communities for the construction of new schemes or the expansion and/or rehabilitation of existing schemes is the one that is most out of reach and unrealistic. The interviews with the District Water Department officials as well as the communities showed that the District Water Department is hardly able to buy new pumps, construct new water points or support the communities in other ways.

Of the thirty interviewed Water User Groups, only eight say they have received support from the District Water Department. Striking was the remark of one of the Water User Groups: "this is the first time we see a water technician from the District Water Department". The support the eight communities have received varies from advice and education, to minor repairs, to training how to solve little problems themselves, to monitoring of their shallow well or borehole, or to the regular provision of chlorine in order to clean the water. All in all, it appears as if the District Water Department does not use any structure or logic in the support the communities receive, nor does it have a reason for the fact that some Water User Groups do receive support and others do not.

In sub-section *3.4 | Latest developments in theory relevant for this research* is mentioned that a significant number of communities expects and receives capital and repair subsidies from other entities. This research has discovered that this conclusion of a large multi-country research project by the Brooks World Poverty Institute (Whittington et al., 2008) does not apply to Sengerema District. Of the thirty Water User Groups, only one has received support from another entity than the District Water Department. It appears that international donors and NGOs only construct water points – two-thirds of the thirty water points that were visited were constructed by other actors than the District Water Department – but do not provide follow-up in the form of monitoring, (regular) training, repair, or rehabilitation. One might recognize some form of the flag-planting phenomenon here[26]. Although half of the 348 water points in the district are broken down, a new donor - JICA - only constructs new water points, instead of rehabilitating the broken water points that were constructed by other donors in the past.

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26 The term 'flag-planting' refers to donor-oriented development cooperation, in which the donor makes sure that he will get the credits for the project he has completed. A flag-planting approach leads to ineffective and inefficient development cooperation, a.o. because of the fact donors do not work together.

6.3.2 | Differentiation within the data set

Although not suitable for quantitative data analysis, the results of the thirty semi-structured group interviews provide some interesting insights.

None of the six Water User Groups that belong to the first stratum, the stratum that consisted of wards that were located far away from Sengerema District, have received any support from the District Water Department. Of the seven Water User Groups that were located nearby the District Water Department, two declare that they have received support from the District Water Department. The fact that none of the Water User Groups that are more difficult and costly to reach have received any support might lead to the conclusion that the District Water Department consciously or unconsciously makes a distinction in giving support between communities nearby and far away. However, the fact that only two out of seven 'easy-to-reach' Water User Groups report that they have received any support, makes that there is no firm foundation for this conclusion.

More clear seems the difference between the relatively 'wet' wards and the 'dry' wards. Of the thirty semi-structured group interviews, six took place in a dry area, while twenty-four where conducted in a relatively wet area. Comparing the answers of the interviews in the wet areas with those of the interviews in the dry areas leads to some interesting findings. One might suspect that in a dry area a community's water source is even more crucial for survival, because there are less alternatives. This hypothesis is confirmed by several facts. First, it becomes visible that significantly more households are dependent on the water sources in the dry areas. It is assumed that in wet areas, people have more alternatives - traditional sources, such as fens and puddles - for fetching water, while in dry areas a constructed water point is the only source. That for a community in a dry area the importance of a water point is higher is visible by the facts that the percentage of communities that currently pay for their water in dry areas is higher than in wet areas; that the willingness to pay for water in dry areas is higher than in wet areas; and that the protection of the water point against theft is better organized in the dry areas. One of the most remarking facts that were revealed by differentiating between wet and dry areas is the extreme difference in received support between the two groups of communities: 83% of communities in dry areas declared to have received support from the District Water Department, compared to only 13% of the communities in wet areas. Although it is not part of any formal policy, it appears as if the DWD deliberately favours communities in dry areas in its selection process for provision of support. The fact that the percentage of communities that requested for support is practically the same in wet as in dry areas proves that the DWD has made this choice independently from the communities. When one takes into consideration that communities in dry areas assign more value to their water point and that the District Water Department gives higher priority to these communities, it is a bit disappointing that these facts have not led to a higher functionality ratio. In this research, 67% of the water points in dry areas were found to be functional, compared to 71% in wet areas.

Table VIII: Differentiation between communities in wet areas and communities in dry areas

	Communities in wet areas	Communities in dry areas
# Households dependent	348	575
Community pays	38%	50%
Willingness to pay 20Tsh / bucket	71%	100%
Protection against thieves	50%	83%
Support DWD	13%	83%
Asked for support	47%	50%
Functionality	71%	67%

Remarking is the fact that the two Water User Groups that were interviewed in Kalebezo, which is one of the best performing[27] wards of the district on water supply, both received support from the District Water Department. On the contrary, the two Water User Groups from the average-performing ward Nyehunge and the two Water User Groups from the poorly performing ward Chifunfu did not receive any support from the District Water Department, although they might be more in need.

Another small sub-group that is investigated is the group of WUGs that take care of a water point that is not constructed by either the government itself or a donor that has worked closely together with the government, such as HESAWA. The hypothesis was that these water points have a larger chance of being ignored or forgotten by the District Water Department. Technicians might feel not so responsible for these water points, because it feels as if they are not theirs. It might be possible as well that these water points do exist without the District Water Department being aware of it. The research appears to confirm this hypothesis, because the water points that were constructed without consultation of the government never received any form of support[28]. The District Water Department even failed to give the Water User Groups of these water points a basic training of how to manage their water point. This example teaches that a donor, NGO, church, private company, or other actor that constructs a water point but is not able to take care of post-construction support (PCS), always has to make sure that the District Water Department is consulted and takes over responsibility.

In sub-section *3.3.2 | Post-construction support* is mentioned that post-construction support is considered to have a positive influence on sustainability. This research contributes to this assumption, by revealing that support from the District Water Department is positively related to functionality of the water point. Of the Water User Groups that receive support 88% has a functional water point, compared to only 64% of those who had not received support. Something similar is visible when one investigates the relation between training and functionality: the sub-group of Water User Groups that have received training has a higher water point functionality ratio than the sub-group of WUGs who did not receive training.

Table IX: Relation between post-construction support and functionality

	WUGs with support	WUGs without support	WUGs with training	WUGs without training
Functionality	88%	64%	76%	55%

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27 The classifications 'well performing', 'average performing', and 'poor performing' refer to a high, average or low 'full waterpoint coverage'. 'Full waterpoint coverage' is the number of functional waterpoints divided by the population times 250. According to the National Water Policy, full coverage equates one water point per 250 people. In the report on Water Point Mapping in Sengerema District of 2007 the figures on full waterpoint coverage per ward are mentioned, and these are used as a baseline for this research (GeoDataConsultants, 2008).

28 These waterpoints were constructed by the Roman Catholic Church and the Evangelical Lutheran Church in Tanzania (KKKT).

6.4 | What are other local, specific factors that should be taken into account?

In the previous three sections of the *Analysis*, the current situation is mapped. In the subsequent sections, the ideal situation and the steps that are necessary to be taken to reach the ideal situation are described. However, there might be some specific factors that play a role in Sengerema District's water supply sector. Overlooking them might result in incorrect conclusions and unexpected incidents during the implementation of the recommendations of this research.

The factors that will be discussed in this sub-section are
- Ownership of the Water User Groups
- Transparency in the communication from the government to the communities
- Relations of accountability within the government, and from government to communities
- Poor accessibility of spare parts
- Cost recovery of water points

6.4.1 | Ownership of the Water User Groups

In several of the in-depth interviews, with government officials as well as with other experts, the concept of ownership of the Water User Groups was mentioned as one of the major problems of the rural water supply sector. A lack of ownership is disastrous for sustainability. Besides, in a district with 600.000 citizens like Sengerema, it cannot be expected that a District Water Department with twenty-four employees can take care of everything that concerns water itself.

In the semi-structured group interviews the Water User Groups most of the times answered the question "Who is the owner of this water point?" with either "the villagers", "the water users", "the community", and occasionally with "the Water User Group". Only once the answer was "this water point belongs to the village government". So, the Water User Groups claim the water points are theirs, but they do not act in that way. In eighteen of the visited villages, the water users do not pay anything for their water. In the other twelve, they often only pay for the guard, not for operation and maintenance or repair of the water point Neither did they ask for support in case their water point experienced problems that were too big for them to solve themselves. More than half of the communities did not ask for support at all, others gave up efforts directly when they did not receive a (positive) reaction. This confirms the statement in section *3.4 | Latest developments in theory relevant for this research* that "within the communities, a change in attitude is needed". This finding shows that a culture of taking responsibility has to be developed[29].

At several of the visits to the water points the official of the District Water Department who joined the researcher was unsatisfied about the way the Water User Group took care of their water point It was not clean, there was no fence build around the water point, the Water User Group failed to plant the right trees around it. In eleven of the thirty interviews, it became clear that the Water User Groups did not protect their water point in any way, although in Sengerema District the pumps[30] of the water points are regularly stolen[31]. As mentioned before, not even one of the 223 Water User Groups in the district has been registered. Registration is expected to improve the feeling of ownership significantly.

Interesting is the fact that a large majority of the communities contributed labour at the beginning (i.e. they supported in preparing the area for construction of the water point, they helped digging, they created a path from the village to the water point, etc.). Sixteen of thirty communities contributed in cash. In literature, it is assumed that contributions in the form of labour, cash, or materials promote community ownership and eventually project sustainability (Silva, 2000). Differentiation within this research's dataset

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29 In case the members of a Water User Group declared in an interview that they needed support, the researcher used to ask if they had asked for support. When they responded negatively, he asked why they did not asked for support. Typical was the discussion in one village: one of those present declared – in their local language – "in fact, because we are lazy". Another replied to him: "no, we shouldn't say that to the researcher. It is better to say that we did not know where to start".

30 The price of a new pump is between 1 million and 2 million Tanzanian shilling (€ 500 - € 1000).

31 This topic will be more elaborated on in *6.4.4 | Poor accessibility of spare parts*.

reveals that financial contribution before construction has no influence at all on functionality and eventually sustainability. Of the sixteen communities that contributed financially at construction, 69% had a functional water point during the time of the research. The functionality ratio of the thirteen communities that had not paid at all for construction costs of their water point was the same: 69%.

Interviews, conversations and personal observations further point towards two tentative conclusions on ownership: it appears that 1) contribution of labour does not lead to as much ownership as finance, and 2) a financial contribution at the beginning does not lead to as much ownership as a regular financial contribution in the form of user fees. When one lives life day by day, contributions in the past are easily forgotten.

In the past, the construction of water supply was arranged totally top-down. Either the district government or an international NGO constructed water points without consultation of the communities. Of course, the benefiting communities were happy to use the water points. But no-one took care of operation and maintenance, and as soon as it broke down, nobody felt responsible for it. As a result, without having asked for support, the community waited and waited for someone to come to repair it. In the meantime they used their traditional, unsafe and insufficient sources of water.

It appears as if walking a few extra kilometres to the lake or fetching from unsafe fens and puddles does not bother the communities too much. The fact that their ancestors used to drink from the Lake Victoria and the district's rivers and puddles results in the fact that the step for communities to go back to these unsafe resources is not very big. It appears as if safe and clean water is not on the top of their own list of priorities. In an in-depth interview, one of the experts from the private sector revealed that there are significant regional differences visible in the way the people take care of their water supply. A region like Shinyanga, which is a few hundred kilometres south from the Lake Victoria, is very dry compared to Sengerema District. In Shinyanga region, Water User Groups perform significantly better. This is a consequence of the fact that in case a pump breaks down, the problems in Shinyanga are much bigger than in Sengerema. While the people in Sengerema easily find some puddles or fens with water, or walk a few extra kilometres to the lake, in Shinyanga region these alternatives are not available. The presence of alternatives that, although unsafe and unclean, are easily and often used by Sengerema's residents, appears to make Sengerema's Water User Groups a bit lazy and apathetic in case of breakdown or other problems with their water point.

Other reasons for a lack of ownership might have their roots in Tanzania's political history and in the minimal level of education of the people in the rural areas. Also, a hint of the in academic field of development cooperation famous term 'donor-dependency' might be visible here.

6.4.2 | Transparency in the communication from the government to the communities

A lack of transparency from the government towards its citizens is considered a serious threat for development and poverty alleviation (Mastwijk, 2009). In Sengerema District, there is a serious lack of transparency concerning water supply.

Communities do not know their own rights and responsibilities, as stated in the National Water Policy and the Water Supply and Sanitation Act, 2009 (MWLD, 2002; WSSA, 2009). Neither are they aware of the judicial obligations of the government. This makes it very difficult to confront the District Water Department with its failure to fulfil its promises. Similarly, the yearly budget of the District Water Department, together with an explanation of how it is spend and why, is not available for Sengerema District's citizens.

This has a direct consequence for the communities' own vigour. The communities do not know that the DWD can only construct four new boreholes yearly out of its budget.

Thus, they are not aware that the chance that in a district with more than 600.000 inhabitants one of these four new boreholes will be constructed in their village is very minimal[32]. Currently, many communities wait for the District Water Department, in the hope that "maybe next year the government will come to our village to construct a new borehole". It would be fair, and it will foster community's own initiative, when the government honestly declares that it only constructs four new boreholes a year. The design and publication of a five years-plan that includes the names of the villages where a new water point will be constructed, would provide much clarity for the communities.

In Tanzania, the ruling political party CCM has a tendency to promise that it will solve all the problems of the country, and that citizens after voting for them can sit back and relax. At the same time, the government has by far not enough resources available to fulfil at least some of their promises. This has resulted in serious apathy from the side of citizens. Besides, in a country that suffers from high levels of corruption, a lack of transparency only multiplies distrust and apathy. Transparency on the contrary might have a positive influence on communities' participation.

Besides, also within the villages there is virtually no transparency. This results in communities distrusting Water User Groups, which on its turn leads to reluctance to pay user fees.

6.4.3 | Relations of accountability within the government, and from the government to the communities

The topic of accountability is linked to the topic of the previous sub-section *6.4.2 | Transparency in the communication from the government to the communities*. In the interviews with government officials, the researcher has purposefully investigated the relations of accountability. As described in sub-section *6.2.2 | District Water Department*, the DWD makes use of a very flat organization structure. All employees of the District Water Department are accountable to the District Water Engineer. The engineer is accountable to the District Executive Director, and his salary is paid by the Ministry of Water. In the past, the Regional Water Engineer was more important in the network of accountability, but due to the decentralization processes his role is now more of an advisory nature.

There are plenty of monthly, quarterly and yearly reports as well as meetings, and there is a form and a discussion on the performance of the Engineer. In these reports, the water coverage is by far the most important figure. Next to that, attention is given to the number of water points that has been constructed or rehabilitated. In short, the internal accountability is at least in theory professionally organized.

More interesting is the external accountability, in particular the influence the beneficiaries – the Water User Groups - are able to exercise on the local government. The in-depth interviews with experts as well as the semi-structured group interviews with the Water User Groups revealed that there is no accountability at all from the communities. The District Water Department is not aware of the opinion of the people.

Although it is absolutely absent in practice, that does not mean that the Ministry of Water and Irrigation of Tanzania is not aware of its importance:

> Social accountability mechanisms, through participatory monitoring and evaluation activities, are very important to ensure that the observations of monitoring reports reflect the actual weaknesses and challenges identified. The issue of developing scorecards and measures to address client satisfaction are being reviewed. In an effort to raise social accountability and governance, participatory monitoring at the community level to enhance the voice of people in decision-making processes is being prepared for use during the next round of monitoring (MWI, 2009).

Accountability is necessary on all levels. A risk of community management is that volunteers are given the responsibility over a relatively large amount of money. In a country like Tanzania, corruption is just around

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32 As mentioned in sub section *6.1 | What are the figures of water supply in Sengerema District?*, currently an estimated number of 278.703 people lack access to safe and clean water. The District Water Department is capable to construct four new boreholes a year. Four boreholes can approximately serve 2600 people. This means that a community has a chance of 0,93% that the DWD will construct a borehole in its living area next year. In other words: for a community, the happiness of getting a new waterpoint comes up once in a century.

the corner, on every level (Brockington, 2007).

It can be concluded that in the water supply sector of Sengerema District, accountability is necessary
  – from Water User Group to water users
  – from Water User Group to District Water Department
  – from District Water Department to Water User Group
  – from District Water Department to District Executive Director
  – from District Water Department to Ministry of Water

6.4.4 | Poor accessibility of spare parts

In Sengerema District - as well as in many other areas in the country and even the continent – water pumps are stolen time and time again. The semi-structured group interviews revealed that six out of thirty Water User Groups had experienced that their pump was stolen. Nevertheless, eleven of the thirty Water User Groups do not protect their pump against theft in any way.

High prices and a very limited availability of pumps as well as spare parts make that communities choose for the criminal way when there pump is broken. Although the punishment for theft of a pump is very serious - there are stories in Sengerema District about thieves who were caught and subsequently were killed by the community – when the prices for pumps are so high that communities cannot afford it, they will decide to steal the pump of another community.

High prices are caused by the facts that there are only a few suppliers, and that the suppliers are far from the villages. Even if the costs for the pump or the spare part needed are not that high, a village has to add up travelling costs and an allowance for the person who goes to the shop.

In the case of Sengerema, some spare parts can be bought in Mwanza (60km), but otherwise they have to be purchased in Morogoro (983 km), Dar es Salaam (1172 km) or Nairobi (1076 km). In Sengerema there are only a few used spare parts available, but they are probably stolen, although there is no evidence.

Another obstacle for a smooth working market system of spare parts is the high variety of extraction systems that is used in Sengerema District. In the water point mapping study conducted in 2007, eleven different extraction systems were counted[33] (GeoDataConsultants, 2008). As different systems need different spare parts, this makes repair of water points even more difficult.

Just as the high prices and limited availability lead to theft, a decrease of the prices and an increase of the availability might automatically lead to a decrease in the criminality. On the basis of interviews with experts is concluded that the sale of water pumps and spare parts is not (yet) an interesting business for the local private sector. Water pumps are high-value, slow-moving goods, what makes them unattractive for a local, small-scale business.

The government, a NGO, or a CBO has to step in to make spare parts and pumps more locally available.

6.4.5 | Cost recovery of water points

The Japanese International Cooperation Agency (JICA) has conducted some research on cost recovery. JICA estimates that the costs for operation and maintenance[34] of a borehole are 338 to 526 Tsh (€ 0,17 to € 0,26) per household per month. In case the community has to pay per bucket, JICA has calculated that the price should be 0,50 Tsh or 1 Tsh (€ 0,00025 or € 0,0005) per litre[35], depending on the kind of water supply system (JICA, 2006).

In the interviews conducted many people declared that they are absolutely willing to pay for their water. Twenty-two Water User Groups were asked if the water users in their community would be able and willing to pay 20 Tsh (€ 0,01) per bucket. Seventeen of these Water User Groups declared that that would be

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33 A complete overview of the proportion of waterpoints supplied by different extraction systems can be found in *Appendix VII: Different extraction systems in Sengerema District*.

34 According to Tanzania's National Water Policy (MWLD, 2002) the costs for operation and maintenance have to be fully covered by the communities themselves.

35 A bucket has a volume of 20 liters. This results in a price per bucket of either 10 Tsh or 20 Tsh (€ 0,005 or € 0,01).

possible. A user fee of 10 Tsh (€ 0,005) per bucket was possible for twenty communities. Besides, an incidental contribution of 1000 Tsh (€ 0,50) or 2000 Tsh (€ 1) per household is affordable for the majority of communities.

The Water User Groups are strongly advised by the government to open an account and collect money – either per bucket or per period – among the users of the water. However, only twelve of the thirty interviewed Water User Groups were in the possession of an account. Of these twelve, not less than seven never use their account[36]. In eighteen of the thirty interviewed communities, the people do not have to pay for their water. In the majority of the twelve communities where people do have to pay, they only pay minor fixed amounts per month or even per year. There were only two communities were the people had to pay 20 Tsh (€ 0,01) per bucket.

The Water User Group is responsible for the collection of user fees. They have to put the money on their bank account. Often, in the Water User Group, one person is appointed as a treasurer. Ideally, the treasurer has to make monthly reports to the water user, the village government, and the District Water Department.

The District Water Engineer explained in an interview that nowadays, when villagers come to the District Water Department and complain that there shallow well is not working, the first question they are asked is: "what about your account?". The DWD uses this question as a sort of a check in the selection of villages where water points are to be rehabilitated or new ones are to be constructed[37].

This appears to be a good instrument for the District Water Department to reinforce its message, although there are some risks to this policy. The Tanzania Water and Sanitation Network has warned for the fact that in this way marginalised communities can be easily overlooked.

> Community demand or readiness carried more weight in decision making than need and, more problematically, was found to be judged primarily by comparing bank balances of village water funds rather than through the bottom-up planning process. The bottom-up planning process produces results that cannot easily be used to assess and compare local priorities. In contrast, comparing bank balances has the benefit of objectivity, is easy to carry out and can serve to explain decisions to councillors and community members. However, it also introduces an obstacle to equity: poorer communities, those with no existing water infrastructure (and therefore with no user group or water fund) and those in areas where project costs are high are all effectively discriminated against (TAWASANET, 2009).

Another critical note is placed by the Policy and Operations Evaluation Department of the Dutch Ministry of Foreign Affairs. In an evaluation of the Dutch development cooperation in the water supply sector in Tanzania, it concludes that "the policy of requiring Water User Groups to open and operate maintenance bank accounts has proved too rigid, and is often unhelpful or costly". The report questions the sense of reality concerning a community's ability to pay for major repairs. It also doubts the ability to adopt saving strategies as prescribed (IOB, 2007).

6.5 | What is, considering the theory on community management and the targets that are set by the government of Tanzania, the situation that is strived for?

There are several aspects about the ideal situation that are worth mentioning. First, of course, there is the part on numbers and figures: how many water points are necessary in order to make sure that all the inhabitants of Sengerema District have access to clean and safe water. Next to that, a legal issue and a social issue are critical parts of an optimal functioning water supply.

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36 Some Water User Groups have an account with no money on it. Others even do not know if their account is still existing.

37 In literature, this practice is referred to as 'demand filter'. It appears as if demand filters such as cash and in-kind contributions of a community have indeed resulted in more sustainability in rural water supply projects (Davis et al., 2008).

6.5.1 | Full water point coverage

In the newest National Water Policy, the government of Tanzania describes its minimum service levels for domestic water supply as follows:

> "In rural areas actual water use ranges from 5 litres per capita per day in acutely water scarce areas to 30 litres per capita per day in other areas. In most cases, domestic water, which is often not potable, is fetched from a source far away from the homestead. In providing rural water supply and sanitation services to rural areas the minimum service levels are established as follows:
>> (i) The basic level of service for domestic water supply in rural areas shall be a protected, year-round supply of 25 litres of potable water per capita per day through water points located within 400 meters from the furthest homestead and serving 250 persons per outlet.
>> (ii) Higher service levels including house connections will be encouraged where it is technically feasible and there is an effective demand" (MWLD, 2002).

A simplified way to calculate the minimum number of functional water points necessary in Sengerema District would be to divide the number of the inhabitants (635.803[38]) by 250. This leads to the conclusion that Sengerema District needs at least 2544 functional water points, a number that is almost 15 times the actual number. In case one takes the minimum distance of 400 meters from the house into account, then, in a sparsely populated district like Sengerema, the necessary number of water points would be much higher than 2544[39].

The personal target of the District Water Engineer is an average of 3 to 4 boreholes[40] per village. In a district with 123 villages, this results in a total number of boreholes of between 360 and 500 - where there are only 15 boreholes at the moment.

6.5.2 | Ownership of Water User Groups

> "Water supply and sanitation facilities provided without the active participation of the beneficiaries in planning and management are often not properly operated and maintained and hence are unsustainable. Ownership of the facilities including water wells is neither perceived to be, nor legally vested in user communities. These factors lead to lack of commitment to maintenance of the facilities by the users. Communities will be empowered to initiate, own and manage their water schemes including water wells" (MWLD, 2002).

The above quoted statement is a short summary of the situation of community managed rural water supply without ownership, written in Tanzania's official National Water Policy and backed by many researches conducted in many areas in the world. Ownership is considered a crucial component, if not to say the backbone, of sustainable community management. As described in sub-section *6.4.1 | Ownership of the Water User Groups*, ownership is a serious problem. In the situation that is strived for, the communities are official owners of their water point. Even more important might be awareness of the fact that the water point belongs to them, and that they themselves are responsible for it. Phillips (2007) mentions that in most of the successful cases of rural water projects the local community was seriously involved. They played an essential role in the planning and construction phase, and they paid for part of the construction costs. A good example for Sengerema's communities are water projects in Cameroon that were funded by CARE. Ninety percent of these projects was successful, because the communities contributed 20% of the total costs and they were an integral component of the planning process.

In the situation that is strived for in Sengerema, the communities make at least a contribution for the capital costs, and take full responsibility for the operation and maintenance costs. In order to do this, the Water

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38 A population of 635.803 persons is the projection for 2009. The last census was in 2002.

39 Mark that the number of inhabitants is not static. The number of needed waterpoints will rise with population growth.

40 The District Water Department no longer recommends shallow wells. Shallow wells (between 2 and 30 meters deep) are not so reliable, do not always provide water in the dry season, and they have the risk of contamination. Boreholes (50-100 meters deep) on the contrary are safe, they have always water, and because the water comes from deep under the ground, there is no risk of contamination. However, the price of one borehole is 20 million to 25 million Tshilling (€ 10.000 - € 12.500), while a shallow well costs only 5 million to 6 million Tshilling (€ 2.500 - € 3.000).

User Groups collect either per period or per bucket some money for the use of water. More about cost recovery of rural water supply can be read in sub-section *6.6.3 | Case-study on financial sustainability*.

6.5.3 | Registration of Water User Groups

According to the Ministry of Water, the fact that ownership of the facilities is "neither perceived to be, nor legally vested in user communities", leads to a lack of commitment to maintenance (MWLD, 2002). Therefore, legal registration is considered to be a means to create the necessary ownership artificially. At the moment, none of the Water User Groups in Sengerema District is registered.

In the situation that is strived for, all Water User Groups are registered – not as a goal in itself, but as a means for ownership on the side of the communities and better service delivery from the District Water Department. Official registration is expected to lead to more sustainability, and to professionalize the functioning of the Water User Groups. For the District Water Department, it will be much easier to overview the whole situation in the district, and to contact the Water User Groups easily and fast[41]. Next to the fact that registration might have a positive influence on the professionalism of the Water User Groups and will improve the ability of the District Water Department to provide services to the communities, it has to be done because it is obliged by Tanzania's Water Supply and Sanitation Act, 2009 (WSSA, 2009).

In 2010, the 5th Joint Supervision Mission took place, in which a number of Tanzania's development partners reviewed the progress made under the Water Sector Development Program (WSDP)[42]. This influential and powerful group of development partners and government officials signalized several major problems in Tanzania's water sector. Sustainability is considered one of the issues, and maintenance and functionality of rural water supply facilities is still generally inadequate. A program to register and capacitate Water User Groups will be launched, and the registration process needs to be accelerated (Ueda et al., 2010). The District Water Engineer of Sengerema District emphasizes that education of the Water User Groups is crucial: "Just registering without them knowing what they have to do will not be sustainable" and "registering a Water User Group without showing them why they are registered will not work". The whole process of formation and registration of a Water User Group has to go together with education and supervision by the District Water Department.

6.6 | What is meant by the concept 'sustainable' in this particular context and how could it be translated into a practical framework?

The concept 'sustainability' has been discussed in the *Theoretical Framework*, in which there was specific attention to sustainability in the water sector as well as in development cooperation in general. In this sub section, the requirements for and characteristics of on the one hand sustainability in the water sector in general and on the other hand sustainability in development cooperation will be combined and applied to Sengerema's specific situation. Besides, a practical framework for sustainability in Sengerema's water supply sector will be provided. At last, a case-study on financial sustainability is developed, which can be used as an example for Sengerema's Water User Groups.

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41 As mentioned in sub-section *5.3.1 | Semi-structured group interviews with Water User Groups*, the District Water Engineer currently does not possess names and contact details of the members of Water User Groups. As a consequence, the fastest way to communicate is to send a technician on a motorcycle to the village.

42 "The Mid-Term Review and 5th Joint Supervision Mission took place from March 22 – April 1, 2010 and consisted of a number of Development Partners (AfDB, German Development Cooperation, Royal Netherlands Embassy, Norway Embassy, World Bank, Dutch Embassy, DfID, SNV, Belgium Cooperation, UNICEF, USAID, MCC, JICA, and Water-Aid). During this period, the mission held discussions with the Ministry of Water and Irrigation (MWI), Prime Minister's Office for Regional Administration and Local Government (PMO-RALG), key Implementation Agencies (Basin Water Offices, Local Government Authorities, and Urban Water and Sewerage Authorities, Department of Irrigation Technical Services, Zonal Irrigation Engineers Units) and the members of the Development Partners Group for Water. The mission also carried out a number of field visits in selected regions to review program progress on on-going and planned activities across the country" (Ueda et al., 2010).

6.6.1 | Sustainability in Sengerema's water supply sector

The Dutch Policy and Operations Evaluation Department, part of the Netherlands Ministry of Foreign Affairs and an experienced actor in development cooperation in Tanzania's water sector, considers three broad sets of issues when it comes to sustainability in the water sector.

First, the environmental dimension of sustainability has to be taken into consideration. Is the water use in Sengerema District within renewable limits? In other words, are the water sources replenished by means of rainfall? Otherwise there is a risk that the construction of more water points will only lead to exacerbating the periodic shortages of water. Likewise, one should examine if sanitation arrangements affect the ecological system. In the case of Sengerema, the risk of contamination of ground water is one of the major reasons for the District Water Engineer to invest in the much more expensive machine-drilled boreholes instead of shallow wells.

The second component of sustainability in Sengerema District has to do with technical capacity and renewal. Constructors should choose for hardware that has a long product life time. However, in the end all pipes and pumps and tanks will one day suffer breakdown, and than the capacity to repair will define the sustainability. So, for technical sustainability, the quality of the hardware is just as important as the availability of qualified technicians and spare parts.

The third dimension of sustainability has to do with the so-called software within the water sector: the institutions and human resources. A trustworthy, consequent and capable government is crucial for long-term sustainability of water supply. Besides, as mentioned before, the Water User Groups are possibly the most important actors in Sengerema's water supply. They have to be educated properly by the District Water Department. However, long-term sustainability requires also that the well-educated and trained members of the Water User Groups will pass on their knowledge to the other members of the community, and in particular to their successors. Another point of concern is the motivation and faithfulness of the Water User Groups on the long term. When the number and the intensity of their tasks increases, it is questionable if they will continue to keep up to the expectations. However, an inactive, demotivated, or lazy Water User Group is devastating for sustainability. Therefore, if it becomes clear that the fact that the WUG members are volunteers hinders sustainability, the communities are advised to consider the option of reward the WUG members with part of the revenues from the user fees.

Where the material quality and durability of one pump is important for the sustainability of the water supply of one specific community, the quality of governance is important for the whole system of water supply, and therefore influences the sustainability of water supply in all communities (IOB, 2007).

In the set of dimensions mentioned here above, the 'software' dimension is distinguished from the others. One might question this division, as it could be argued that institutions and human resources are important components of the first two dimensions as well. Environmental sustainability cannot be guaranteed if the water resource management is inappropriate. Similarly, as mentioned before, technical sustainability cannot be guaranteed if there are no qualified technicians to take care of repair and replacement.

6.6.2 | Practical framework for sustainability in Sengerema's water supply sector

According to the National Water Policy, "sustainable development and delivery of rural water supply services relies on clear definition of the roles and responsibilities of the various actors as well as those of the stakeholder groups" (MWLD, 2002). The prerequisites for sustainability are:

- Adopting the principle of managing water schemes at the lowest appropriate level,
- The beneficiaries themselves establishing, owning and managing their water schemes,
- Ensuring full cost-recovery for operation and maintenance, and replacement,
- Facilitating availability of spare parts and know how for timely repair and maintenance of the schemes through standardization of equipment and promotion of private sector involvement,
- Protection of water sources areas,
- Reconciling the choice of technology and the level of service with the economic capacity of the user groups, and
- Recognizing women as being among the principal actors in the provision of rural water supply services (MWLD, 2002).

Based on these principles, together with interviews with experts and the semi-structured group interviews with the Water User Groups, the researcher has developed a practical framework for sustainability in the rural water sector of Sengerema District. The framework consists of several components.

For sustainability in Sengerema's rural water supply, it is crucial that:

- The communities are the official owners and managers of their water supply system. A community's feeling of ownership is a crucial feature of this framework. Phillips (2007) confirms this by stating that while money might be critical for a successful water system, a less tangible factor such as the role of the community is even more critical. If a feeling of ownership is absent, a water supply system is doomed to failure.
- Every pump has a Water User Group, which is chosen by the water users and which is responsible for operation and maintenance, collection of the users contributions, bookkeeping and management of the bank account, for repair, and, in case of major breakdown, for communication with the District Water Department.
- The Water User Groups are (regularly) educated and trained by the officials of the District Water Department, on technical issues concerning their water points as well as on management issues like bookkeeping and management of their bank account. When a community's Water User Group is replaced after several years, the District Water Department is responsible for education and training of the new Water User Group.
- The users regularly contribute money, ideally a little amount per bucket, in order to make sure that costs for operation and maintenance, for repair, and in the end extension or replacement, can be covered[43].
- The Water User Groups are officially registered. This will provide them with the legal entitlements that are necessary for opening and managing a bank account, and for hiring a private sector company for repair or extension of their water supply system. Besides, this will enable the District Water Department with a clear overview of all the Water User Groups.
- The Water User Groups all open their own bank account. The money they regularly collect has to be brought to the bank, in order to keep the money safe, and to minimize the risk of corruption and theft.
- The District Water Department has regular contact with the Water User Groups. Due to the official registration of the Water User Groups, the DWD has the contact information of the members of the Water User Groups. Regular contact with the Water User Groups provides the DWD with up-to-date information on the status of the water supply systems in the district, and is helpful in keeping an eye on the functioning of the different Water User Groups.
- There is regular monitoring of the water supply systems. Without monitoring, a minor problem can develop unnoticed into a major problem, or even in total breakdown.
- Since many pumps in the district are stolen, either the appointment of a guard or the construction of a fence with a lock are necessary for the protection of the expensive pump.
- In case of construction of a water point, according to the National Water Policy communities have to choose the technology of their preference (MWLD, 2002). However, a minimum variety of extraction systems facilitates a smooth market system for spare parts, and thus increases sustainability. The District Water Department has to keep track of the number and the variety of extraction systems and advises the Water User Groups on this topic.
- Accessibility of spare parts is crucial for sustainability, as it enables the Water User Groups to get their water points repaired in a proper way. Besides, it will discourage theft of water pumps. As the market for spares is probably to small to be of interest for any commercial operator, either the District Water Department, the District Forum for Local Economy, a donor or a non-governmental organization has to step in and organize a system that is suitable for the situation in Sengerema District.

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43 On this component of the framework will be elaborated in sub-section *6.6.3 | Case-study on financial sustainability*.

This framework can be used as a practical check list for sustainability for the stakeholders of Sengerema's rural water supply.

6.6.3 | Case-study on financial sustainability

One of the most important reasons for a lack of sustainability in the rural water sector in Sengerema District is the fact that the users often do not have to pay for their water. Of the thirty communities that were interviewed, only twelve had to contribute some money for their water point. Of these twelve, some only pay for a guard, and not at all for operation and maintenance, repair, extension, or replacement of their water point. The fact that there is no regular collection of money makes that communities, in case of a problem with their water point, do not have the resources to fix the problem.

In collaboration with the District Water Engineer and a Community Development Officer, the researcher has developed a model which shows that for many of the communities, it is feasible to be financially self-sustaining.

Table X: Model for financial sustainability of a water point

- A shallow well can officially serve 50 households.

- One household needs on average 7 buckets of water per day. If the price per bucket of water is set on 20 Tanzanian shillings, every household will contribute 140 Tsh per day.

- The total contribution of the community per day will be 7.000 Tsh (140 Tsh per household per day times 50 households). This equals 210.000 Tsh per month (7.000 Tsh times 30 days) and 2.520.000 Tsh per year (210.000 Tsh times 12 months).

- Twenty percent of total revenues (20% of 2.520.000 Tsh is 504.000 Tsh) has to be paid as a salary to the guard. After the guard has been paid, there is 2.016.000 Tsh left.

- The total costs of repair per year might be on average 500.000 Tsh. After the repair has been paid for, the total net revenue is 1.516.000 Tsh per year.

- The price for the construction of a new shallow well is 5-6 million Tsh. This means that every four years, a new shallow well can be constructed, which is totally paid for by the community.

This model proves that it must be possible for a community to be financially self-sustaining, with on the long term even extension of their water supply systems as a result.

Also interesting is the economic evaluation that the Japanese International Cooperation Agency (JICA) has conducted before it started to construct several boreholes in Sengerema District. Usually, a prerequisite for an investment is a Benefit / Cost Ratio (B/C) that exceeds 1.0, a positive Net Present Value (NPV), and an Internal Rate of Return (IRR) that exceeds the opportunity costs of capital. For its calculations, JICA considered as Cost the sum of the costs for construction of water supply facilities, administration, engineering services, and physical contingency and recurrent costs, which consist of annual operation, maintenance and replacement costs for the equipment and facilities. As Benefit, it considered the benefits of health improvement and the benefits of saved time for water fetching. The economic feasibility of the construction of the boreholes in Sengerema District is proved by an IRR of 13,8% that amply exceeds the opportunity cost of capital of 10%, a positive NPV, and a B/C that exceeds 1.0 (JICA, 2006).

6.7 | What is necessary to reach the desired situation, as described in the sub questions 5 and 6?

It is important to start with what is already available[44]. Instead of focussing on the 2370[45] water points that are necessary but not yet available, time, energy and resources have to be invested in the 174 functional water points that are already there. In some developing areas, the yearly number of water points that experienced major breakdown was larger than the yearly number of water points that were newly constructed (Phillips, 2007). This means that these areas experience a negative growth ratio of water supply systems!

Because maintenance of an existing water point is in general cheaper than construction of a new one, all stakeholders are encouraged to give first priority to the already existing water points. The 174 water points that are currently functional, are the ones to start with. A first thing to do is to map the current situation. The Water Point Mapping Study (GeoDataConsultants, 2008) and this thesis might be of value for this first step. The location of the functional water points, as well as the contact information of the Water User Groups that are in charge at the moment, have to be collected in one database. Second, District Water Department officials have to investigate those water points' situation, and have to inform the Water User Groups about steps that will be taken in order to improve and professionalize their functioning. In this phase, Water User Groups will be educated on technical aspects of their responsibility. The third step is official registration of the already existing Water User Groups. This step has to be taken in collaboration with the District Legal Officer. After registration, Water User Groups are allowed to open a bank account, which is the fourth step. The fifth step is to start with the collection of money. Before the Water User Groups start collecting money, they have to inform the water users, and they have to receive a training on bookkeeping and on using a bank account. Needless to say, all steps take place under close supervision of the District Water Department.

These five steps can be seen as a new start and they are prerequisites for proper functioning of the Water User Groups. As from the moment of completion of the five steps, the District Water Department has to start with regular monitoring of the water point as well as of the functioning of the Water User Group.

Table XI: The Five-Step Model for improvement of existing water points

1. Map the current situation.
2. Investigate every functional water point and inform existing Water User Group.
3. Register existing Water User Group.
4. Water User Group opens bank account.
5. Water User Group informs water users and starts with collection of user fees.

It will be impossible to help all 174 current Water User Groups at the same time. Therefore, the District Water Department has to make a selection. It is better to invest deeply in a few communities in order to let them flourish, than to give them all an equal portion of attention which is too small to create any progress at all. With creating a few outstanding examples of very well-functioning Water User Groups, the District Water Department is able to set a clear standard for all Water User Groups. The best Water User Groups can be used as examples for the rest, and will be catalysts for improvement in the whole water supply sector of the district. This can be used as a means for improving ownership as well. When the Water User Groups that show to be willing and well-performing are rewarded and used as an example, while the unwilling, lazy, and poorly performing Water User Groups are punished for their irresponsible behaviour, then the

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44 NB this is contradictory to conventional policies, in which allocating investments for the construction of new systems is easier than sustaining public finance for the maintenance of existing waterpoints (Davis et al., 2008).

45 In sub-section *6.5.1 | Full water point coverage* is calculated that according to the targets of the National Water Policy, with an estimated number of inhabitants of 635.803, Sengerema District should have at least 2544 waterpoints. In order to reach this number, 2370 new waterpoints have to be added to the current number of 174.

communities will understand that their well-being is partly dependent on their own contribution.

After several Water User Groups have completed the Five-Step Model, and are performing on a sufficient level with regular monitoring, then it is time to select the next few Water User Groups for an in-depth investment in the form of the five steps mentioned in Table XI.

As is visible in Table XI, the Water User Groups play a large role in the process and a lot of effort is asked from its members. However, in general these members are volunteers. The communities as well as the District Water Department have to reconsider if it is desirable and sustainable that the members of the Water User Groups are not rewarded for their efforts. A form of performance-dependent pay – the Water User Groups are rewarded when their water supply system is properly managed - might be appropriate.

With a budget of approximately 80 million Tanzanian shilling (€ 40.000) per year for construction of new water points, either boreholes (20 million Tsh / € 10.000 each) or shallow wells (5-6 million Tsh / € 2.500 – 3.000 each), it will take years and years before the District Water Department will reach the official target of at least 2544 functional water points in Sengerema District. Only 6,8 percent (174 functional water points) of this target is reached at the moment. The District Water Department and other stakeholders might try to increase the growth ratio of water points by applying for more funds at the Ministry of Water and international donors. However, they have to keep in mind that sustainable development in the rural water sector comes from growth from within the district: villagers who pay for their water services, and with that build up savings on their bank account. As sub-section *6.6.3 | Case-study on financial sustainability* has shown, a community who pays for its water is able to extend its water supply system with another pump within four years. In this way the villagers become independent from donors for their water supply, and are able to build up a self-sustaining life.

An important warning for the District Water Department as well as for the donors is that they should never construct a new water point for free[46]. Although constructing water points for free appears to be very contributing for development, the costs will be paid on the long term. Many examples, even in this research, have demonstrated that the water users feel no ownership for this donor-given water points. They are happy with it, they use it, but they don't take care of it, and when it breaks down, it is easily abandoned.

In the process of planning the construction of new water points, it is very important to conduct a community needs assessment. In the past, the construction of water points has often been a top-down process, in which the donor told the community what it needed and what was good for it. This hinders a community's feeling of ownership, just as it underestimates a community's ability to recognize its problems and its needs. Therefore, it is recommended to involve a community in all phases of the process: in the process of determining priorities, in designing a joint planning for the steps to be taken, and in the different phases of implementation.

Besides, it is necessary that, in case the District Water Department or an international donor pays for construction, the community at least contributes in a physical and in a financial way. Examples of physical contribution are the preparation of the area where the water point is constructed, the preparation of a path from the village to the water point, and digging the hole in which the pump will be placed. A financial contribution during or before the construction phase is ideally a fixed amount per household.

In involving the community in the process, it is important for the process owners to be aware of the gender bias. Although water is used by both men and women, it is mostly fetched by the women. Their opinions should not be overseen in the community's needs assessment, neither in decision making, because they might be more familiar with the problems and challenges of daily life than their husbands.

As mentioned before, the problem of breakdown and abandonment of already existing water supply systems should not be underestimated. In order to keep the water supply systems operating properly, post-

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46 It is recommended to follow the suggestion of Kyessi (2005), who states that "communities should, in principle, get assistance only after they have exhausted own initiatives. External assistance ought to be a form of help towards self-help, which would be intended to provide initial stimulus".

construction support, such as education, monitoring, and minor repair are ingredients just as important as the construction itself. Construction and training without follow-up are not sustainable.

In order to involve the Water User Groups, the ones responsible for post-construction support might consider to make education, monitoring, and minor repair participatory.

For sustainability, a solution has to be found for the poor accessibility of spare parts. One option is to open a spare part shop in Sengerema town, or to sell spare parts from the office of the District Water Department or the Business Development Service-shop[47].

Summarizing, for long-term development, it is crucial that all stakeholders make use of the sustainability framework as provided in sub-section *6.6.2 | Practical framework for sustainability in Sengerema's water supply sector*.

6.8 | What is needed from the several stakeholders in order to reach the desired situation?

In the first sub-section of the Analysis, section *6.1 | What are the figures of water supply in Sengerema District?*, the current situation of Sengerema District's water supply has been described as rather problematic. In the second section *6.2 | Who are the (potential) suppliers of water in Sengerema District?*, the several (potential) actors in the rural water sector were discussed. In the succeeding sections, the situation that is strived for in Sengerema District's water supply sector was set out, with some special attention for the topic of sustainability. In this section the roles and responsibilities of the different actors are assigned. The same structure as in *6.2 | Who are the (potential) suppliers of water in Sengerema District?* will be applied here. This sub-section concludes with some remarks on the importance of mutual relationships and cooperation among the stakeholders.

6.8.1 | Water User Groups

The Water User Groups are the key actors in reaching a healthy and sustainable situation of water supply in Sengerema District. Conclusions of Phillips (2007), also quoted in sub-section *3.3.1 | Ownership*, confirm the findings on the important role of (the representatives of) the community once again:

> The case study reveals that although financial and technical support are essential to assure the successful completion of rural water system projects, it is more important to target communities that are deeply committed to its goals and objectives and who actively participate in its planning, financing, and construction. In particular, the community must possess strong, dedicated leaders who donate time and energy to see the project through to completion (Phillips, 2007).

The Water User Groups have to switch roles from dependent, apathetic consumers to pro-active, participating, and responsible parties in the water supply sector. They will be regularly trained by the District Water Department, and will become responsible for
- operation and maintenance
- monitoring of the functioning of the water point
- protection of the pump
- minor repairs
- informing the District Water Department on breakdowns that are too complex to solve themselves
- collect user fees
- bring the user fees to the Water User Group's bank account

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47 The Community Based Resource Centre of Shinyanga Region is a good example of a non-commercial spare part shop. Spare parts for all the extraction systems that are currently in use in Shinyanga Region are available in this shop. In Sengerema, a similar shop could be opened by for example the District Water Department or the District Forum for Local Economy. Another option that is worth investigating might be to set up an extension of Shinyanga's spare part shop in Sengerema District.

- take care of trustworthy and transparent bookkeeping
- informing the District Water Department on a regular basis on the status of the water point as well as on the status of the books and the account

In the start-up phase, immediately after the twelve members of the Water User Group has been chosen by the community, the WUG has to be legally registered, and a bank account on the name of the WUG has to be opened. The Water User Groups have to inform the District Water Department on the change of power within the WUG. Subsequently, the District Water Department takes the lead in the process of registration and opening / adjustment of a bank account.

The above mentioned list confirms what was already concluded in sub section *6.7 | What is necessary to reach the desired situation, as described in the sub questions 5 and 6?*: the Water User Groups play a very important role in the communities' water supply. However, in sub section *6.2.1 | Water User Groups* is elaborated on the fact that their current performance is way below the level that is required in the National Water Policy. In order to fulfil the enumeration of tasks as mentioned above, serious investments in regular education are therefore crucial, as will be discussed in the next sub section. Moreover, the fact that Water User Groups to this day consist of volunteers is a thing the DWD has to keep track of. In case the tasks and trainings become too time-consuming, the communities of water users have to reconsider if an allowance is appropriate for the WUG members.

6.8.2 | District Water Department

The District Water Department is the major facilitator of a sustainable water supply sector; its success or failure is based on the success or failure of the Water User Groups. DWD's officials will work, more than they do already, in the service of the Water User Groups. The District Water Engineer recognized as the biggest challenge for his department "to transport knowledge to the communities and to create ownership". This resembles the conclusion of Sokile that "water management issue is both a question of developing stakeholders' participation and transferring state's competence to water user associations" (Sokile et al., 2003). In educating the Water User Group members of Sengerema District, it is important to take into consideration that many residents of the rural areas lack a proper education. The District Water Department should not underestimate the efforts necessary for proper education[48] of the Water User Groups. Insufficient education might become very costly on the long term.

Since 2009, the District Water Department is also legally responsible for the support to the Water User Groups (WSSA, 2009). The DWD's responsibility will be the following:
- Educate and train the Water User Groups
  - on technical aspects, such as operation and maintenance, monitoring, and minor repair
  - on managerial aspects, such as collecting user fees, bookkeeping, and using a bank account[49].
- Support the Water User Groups with legal registration.
- Monitor the water supply facilities throughout the district.
- Take care of major repairs, on demand of the Water User Groups.
- Keep track of the number and variety of extraction systems, and advise the Water User Groups in their choice of technology. Keep in mind that a low variety of extraction systems enables a smooth flow of spare parts, and with that increases sustainability.

Very important for the District Water Department is that it institutionalizes and structures its support. As training and monitoring are regular activities, long term plans could be developed in order to ensure structure and logic. For registration as well as for opening a bank account, standard procedures[50] can be set

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48 In education of the WUGs, it is important to take into consideration that just teaching them some trics to clean or repair might not be sufficient. The trainers have to teach the logic behind the tasks as well, and they have to make sure that the WUG members understand the necessity of predescribed tasks.

49 Research in South-America has shown that in particular regular visits from management specialists resulted in higher user satisfaction as well as improved system functioning (Davis et al., 2008).

50 An example of a standard procedure for registration of COWSOs, as developed by the researcher, can be found in *Appendix VIII: Official procedure of registration of COWSOs.*

up, which can be used every time an existing Water User Group is 'upgraded' or a new one is installed.

The total process of registration and opening a bank account might last several months. Therefore, in case of construction of a new water point, the constitution and registration of a Water User Group and the opening of a bank account have to start as soon as the design- and planning phase for the new water point has started.

6.8.3 | Regional Water Department

In sub-section *6.2.3 | Regional Water Department* was concluded that the power, the freedom, and the responsibilities of the Regional Water Department have decreased severely in the last two decades. Except for a bit of paperwork monitoring, the Regional Water Department is not actively involved in improving rural water supply. Unless the RWD changes its role and positions itself in a different way in the whole water supply system, its importance will diminish more and more.

One potential topic to specialize on would be the training of the technicians. The officials of the District Water Department have to educate the Water User Groups on collecting user fees, bookkeeping and using a bank account. Currently, DWD's officials do not have any knowledge or experience in that area themselves. The Regional Water Department might fulfil this gap and could take the responsibility of 'training the trainers'.

6.8.4 | Ministry of Water

The latest National Water Policy has shifted several responsibilities to the lowest appropriate level (MWLD, 2002). In sub-section *6.7 | What is necessary to reach the desired situation, as described in the sub questions 5 and 6?* was already mentioned that actors in rural water supply should start with what is already there, instead of focussing on what is not there yet.

Combining these two things makes that the key for sustainable rural water supply in Tanzania lies within the communities. Whereas the Ministry of Water has often played the lead role in the past decades, now it is time for them to play the role of facilitator. The Ministry of Water facilitates the processes in the district best when:

- the legal and regulatory framework is up-to-date and serves a proper functioning of the system
- District Water Departments are supplied with sufficient resources, such as transport, materials, human resources, and funds for rehabilitation and construction
- it continues and improves her applications for funds to bilateral and multilateral development partners

6.8.5 | International donors and NGOs

International donors and NGOs have always been very welcome in developing countries, because they were seen as providers of 'development for free'. However, the dozens of broken and abandoned HESAWA-shallow wells teach us time and time again that 'development for free' is no real development. Therefore, although international donors and NGOs are still very welcome, they have to play by the rules that are defined by the District Water Department and the Water User Groups.

The consequences for development partners are as follows:

- For all new water points that are constructed in the district, the communities have to contribute at least a part of the construction costs. Donors are no longer allowed to provide water pumps for free.
- Before construction of a new water point, a Water User Group has to be formed and registered. The District Water Department is responsible for education and training of this new Water User Group.
- After construction is finished, the water point will officially be handed over to the appointed Water User Group. The community is encouraged to give the water point a name. There is no room for 'flag-planting' by the donor.
- In order to improve sustainability and facilitate replacement of spare parts, the Water User Groups

are advised by the District Water Department in their choice of technology. Donors have to submit to the choices of the Water User Groups and the District Water Department.

6.8.6 | Public Private Partnerships

Public Private Partnerships (PPPs) can be of serious value for the rural water supply in Sengerema District. As discovered in earlier sections, one of the major problems of the District Water Department is a lack of finance. Out of their budget, they are able to construct four machine-drilled boreholes or fourteen shallow wells per year. Public Private Partnerships on the contrary often have some savings available for investment, or have access to finance. Sub-section *6.6.3 | Case-study on financial sustainability* has shown that it takes a Water User Group approximately four years before they have recovered the investment of a shallow well, and are able to pay for the construction of a new one. A Public Private Partnership could speed up the increase of water coverage significantly by providing loans to Water User Groups.

Besides, as was already mentioned in sub section *6.6.2 | Practical framework for sustainability in Sengerema's water supply sector*, a spare part shop would be of significant importance for the sustainability of the district's water system. A Public Private Partnership would bring private entrepreneurship together with the necessary (material) back-up from the government.

The most influential and promising Public Private Partnership of Sengerema District, the District Forum for Local Economy (DFLE), could serve the water supply in its district by:

- Adding a cluster on water to the thirteen clusters that are already there. The DFLE has to recognize the economic value of water. Water should be put higher on the agenda of the DFLE.
- Providing loans to Water User Groups, just as the DFLE provides loans to economic groups in the District.
- Opening a spare part shop, preferably in the newly constructed Business Development Service-shop. The DFLE should seek for cooperation with the District Water Department in setting up this shop.

The District Forum for Local Economy is recommended to further investigate these three options.

6.8.7 | Other actors

To the other actors that were recognized in sub-section *6.2 | Who are the (potential) suppliers of water in Sengerema District?*, the churches, the same applies as to international donors and NGOs. Their support is very much appreciated, in particular because the church shows to be able to reach the poorest of the poor, who are difficult to reach for international donors and the District Water Department. However, it would serve the people of Sengerema District best if:

- The construction of new water points, or other forms of support, take place in consultation with the District Water Department.
- The church makes use of technologies that are chosen by the Water User Groups and recommended by the District Water Department.
- Also for water points constructed by the church, a Water User Group is installed that is legally registered, trained by the technicians of the District Water Department, and that collects user fees among the water users.
- The beneficiaries of a water point that is paid for by the church, also have to contribute both financially as physically for the construction of their water point.

6.8.8 | Cooperation among stakeholders

Now that all stakeholders have been discussed separately, it is important to make some remarks on the importance of cooperation as well. Sustainability cannot be guaranteed when all these actors work individually on their own projects and responsibilities.

As Biswas (2004) stated, today's water supply is so complex that the many different organizations have to cooperate:

> In recent years, it has become increasingly evident that the water problems of a country can no longer be resolved by the water professionals and/or the water ministries alone. The water problems are becoming increasingly more and more interconnected with other development-related issues and also with social, economic, environmental, legal, and political factors at local and national levels and sometimes at regional and even international levels. Already, many of the water problems have already become far too complex, interconnected and large to be handled by any one single institution, irrespective of the authority and resources given to it, technical expertise and management capacity available, level of political support, and all the good intentions (Biswas, 2004).

Phillips (2007) confirms this when he describes his experiences from a case-study on water supply in a development context.

> The primary lesson to be learned from this experience is that the success of rural development projects is largely driven by the synergy between the community, technical support, financial support, and agents of change such as extension agents. If any of these ingredients had been lacking, the project result would likely have been far different (Phillips, 2007).

In Sengerema District, failure of one of the actors might have disastrous consequences for rural water supply in general. If Water User Groups do not act in a responsible way, sustainability can never be guaranteed. Likewise, the District Legal Officer is indispensable for registration, just as actors such as the Ministry of Water and donors are at least on the short term needed for the necessary financial investments. Then, the District Water Department is of course crucial for providing direct support to the Water User Groups. Community management might be a sound model for the organization of rural water supply, but Water User Groups who have to function in isolation are doomed to fail.

7 | SYNTHESIS

After a comprehensive *Analysis* of the results of the research, the main research question can be answered. This will be done in the first section of this chapter. As the topic of (support to) community management has obtained some attention in the academic literature, it will be interesting to find out how the findings of this research will fit in the already existing framework. In the second section confirmations and refutations of existing beliefs will be presented, together with new contributions and recommendations for further research. Whereas section two can be considered a contribution to the academic debate, section three comprises of a contribution to the policy debate. Recommendations to all stakeholders, derived from the *Analysis* of this research, will be presented here.

The initial aim of the research was to investigate current support to Water User Groups, to explore what kind of support is needed, and to make recommendations for improvement of support to Water User Groups. In the sub sections *7.1 | Answer to the main research question: How can support to Water User Groups be organized in a sustainable manner?* and *7.2 | Contribution to the academic debate* the first two parts of the research objective will be addressed. Sub section *7.3 | Contribution to the policy debate* will cover the last part of the research aim.

7.1 | Answer to the main research question: *How can support to Water User Groups be organized in a sustainable manner?*

The field research in Sengerema District showed that almost half of the population lacks access to clean and safe water. For more than 600.000 people, only 348 water points are available, of which only 174 are operational. In Sengerema, community management of water is the predominant management model, in which a Water User Group consisting of twelve elected villagers takes care of a water point on behalf of the community. However, as academic literature as well as the figures of water supply in Sengerema District demonstrates, these Water User Groups are not able to manage the communities' water themselves. Direct support comes from the District Water Department and an international donor, and on rare occasion from another actor, such as a church. However, only eight of thirty interviewed Water User Groups have received post-construction support from the District Water Department, and only one from another actor.

The conclusion that post-construction support from the District Water Department to the Water User Groups in Sengerema District has to be improved, is an easy one. In designing a sustainable support model, one has to take several local, specific factors into account. One of these factors is a widespread perceived lack of ownership of the communities, which results in a lack of responsibility of the Water User Groups. Another one is a virtually total absence of transparency in the DWD's budget and planned activities. This results in 124 villages desperately hoping that the District Water Department will construct a new borehole in their village in the coming year, without knowing that the DWD has a yearly budget for construction of only four new boreholes. This lack of transparency keeps the WUGs from taking action themselves. Related to a lack of transparency is the third factor: the absence of a reciprocal relation of accountability between the Water User Groups and the District Water Department. A fourth factor is the poor accessibility of spare parts combined with the high variety of extraction systems in Sengerema District, which result in a high prevalence of theft of water pumps. The fifth factor that has to be taken into account is the fact that in a very small portion of the communities the users pay for operation and maintenance costs, let alone for future repair or rehabilitation.

Cost recovery is just one of the components of the in this research developed *Sustainability framework for community management of water*. This framework promises to be a very useful tool for the organization of sustainable support to Water User Groups. The framework further comprises the instalment of a Water User Group that is responsible for operation and maintenance as well as for financial management; a feeling of ownership of the Water User Group, leading to a feeling of responsibility for the water point; (regular) training of the WUG by the District Water Department; legal registration of the Water User Group, as well as the opening of a bank account; regular contact between DWD and WUG as well as regular monitoring of the water point; protection of the water pump against theft; and, involvement of the community in the design-,
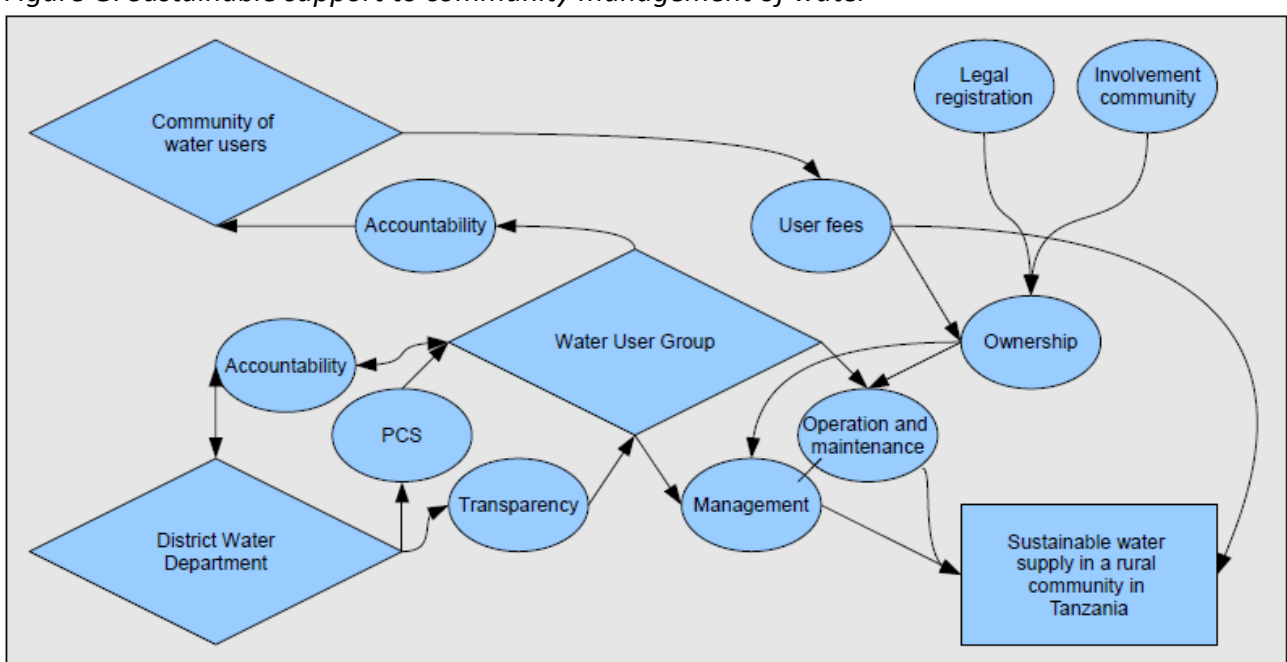
the planning-, and the construction phase.

In order to achieve sufficient and sustainable supply of clean and safe water in Sengerema District, it is important that the involved stakeholders start with what is already available. The *Five-Step Model for improvement of existing water points*[51] should be followed accurately, and the model for financial sustainability as developed in *Table X* should be used in all communities.

It is revealed that in improving water coverage, Sengerema's District Water Department is not even capable of keeping up with population growth (which in fact will lead to a *negative* growth ratio of water coverage!). Therefore, for long-term sustainability, the communities themselves have to take initiative. So, as the end-goal is that communities organize their water supply themselves, support should be focused on enabling Water User Groups to take responsibility themselves.

Facilitation of the Water User Groups in the management of their water points, as well as the creation of a properly working support system are the major tasks for the stakeholders in Sengerema's water sector.

Figure G is a graphic representation of the answer to the main research question.

Figure G: Sustainable support to community management of water

PCS = post-construction support, including regular training, regular contact between DWD and WUG, regular monitoring, and repair.
Involvement community = Involvement of the community in the design, planning, and construction phase of the waterpoint.

7.2 | Contribution to the academic debate

Comparing the results of this research with academic literature on community management might lead to refinement of the existing theory as well as useful insights for the practical situation in Sengerema District.

This study has demonstrated that in several aspects Sengerema District is not so much different from other rural areas in Sub-Saharan Africa where community management is the predominant model for water supply.

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51 The *Five-Step Model for improvement of existing waterpoints* consists of 1) Map the current situation; 2) Investigate every functional waterpoint and inform existing Water User Group; 3) Registrate existing Water User Group; 4) Water User Group opens bank account; and 5) Water User Group informs water users and starts with collection of water user fees.

With a failure rate of water points of 50% it fits easily in the picture on sustainability that was drawn by Phillips (2007)[52]. The outcomes of this research confirm the conclusions of Harvey and Reed (2006) and of Whittington et al. (2008) that long-term support or post-construction support for communities is an essential element of sustainable community management.

One of the most important findings of this research is that community management without cost recovery will never be sustainable. This is in line with the findings of the research conducted by Kyessi (2005) and the evaluations of the Policy and Operations Evaluation Department of the Dutch Ministry of Foreign Affairs (IOB, 2007). Cost recovery is thus a very important component to include in every organization of support to Water User Groups.

In order to get an even better understanding of community management in Sengerema District it is interesting to place it within the model on different forms of participation in development[53]. The end-goal – and most sustainable form - of community management would be *self-mobilization* or at least *interactive participation*, both belonging to the transformative view on participatory development. However, the community management as examined in this research fits better in the forms that belong to the functional view on participatory development. Many cases encountered in Sengerema are aptly represented in the words of the descriptions belonging to *passive participation* and *information giving*: "the community is told what is going to happen" and "attempts are done to make sure that the people are informed well". Likewise, in many villages examples of *participation for material incentives* were found, such as the contribution of labour as a prerequisite for the construction of a water point. It appears as if the District Water Department looks to community management from the functional view on participatory development. Bergh's conclusion seems to refer to the government of Tanzania as well: "To them, community management is more about low-cost maintenance and cost-effective delivery than about radical social transformation of their rural population" (Bergh, 2007).

Another finding is that the in this research observed form of community management does not nearly match the theoretical description of community management as provided by a.o. Smits (2005):

> Community management: The management model in which communities themselves are in control of strategic decision making about their service provision. Key principles of community management are: community participation, community control, community ownership and cost sharing by the community (Smits, 2005).

In practically all visited villages, the Water User Groups or communities as a whole were not in control of strategic decision making; currently, Water User Groups are in charge of cleaning and maintenance of their pumps, but for major decisions or operations still rather dependent on the government or other actors. Neither are all key principles as formulated by Smits (2005) put into practice. Community's ownership is not (yet) legally vested, and - as discussed before – cost sharing is an exception.

It can be concluded that, for community management to appear in the way it is meant to be, a change in the people's attitude is needed (Bergh, 2007). Also in Sengerema, what is needed is the development of a culture of taking responsibility, as well as a culture of accountability and evaluation.

In many academic articles, a lack of ownership is mentioned as one of the main reasons for the disappointing results of community management. However, this research has shown that the large majority of Water User Groups is aware of the fact that they are the official owners of their water point. On the basis of the findings in Sengerema, it is suggested to slightly alter the formulation 'a lack of ownership' in academic literature into 'a lack of responsibility' or 'a lack of initiative'. It was often thought that responsibility and initiative would follow automatically out of (a feeling of) ownership, but this research appears to falsify that widespread belief. The terms 'lack of initiative' and 'lack of responsibility' appear to describe the genuine situation a bit more precise, which prevents future research as well as development interventions from spending time and resources on a community's (feeling of) ownership. It can be

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52 Phillips writes: "Despite the blanket application of community management of rural water supplies in sub-Saharan Africa, the sustainability of such interventions remains woefully inadequate. It is currently estimated that 35% of all rural water systems in sub-Saharan Africa are not functioning (Baumann, 2005). Recent figures from individual African countries indicate operational failure rates of between 30 and 60% (Hazelton, 2000; DWD, 2002; Sutton, 2005)" (Phillips, 2007).

53 See *Table I: Different forms of participation in development*, page 9.

concluded that 'ownership' - often mentioned as the key for sustainable community management – is a bit of an overestimated concept. If there are any 'keys' in community management, this research has distinguished two of them: 1) within the community, either initiative or responsibility, and 2) in the system, tailor-made support to the Water User Groups. For both of them, further research is strongly recommended.

7.3 | *Contribution to the policy debate*

From the start, the researcher intended his research to be of practical use for the stakeholders in the rural water sector of Sengerema District. Therefore, the *Answer to the main research question* and the *Contribution to the Academic Debate* will be translated into practical recommendations for the involved actors.

7.3.1 | Recommendations to the Water User Groups

First and above all, the Water User Groups are strongly recommended to take responsibility for their water point. This includes taking care of operation and maintenance, financial management, and maintaining good contact with the District Water Department. Every Water User Group is advised to start collecting user fees. The amount has to be determined in consultation with the water users. An amount of 20 Tsh (€ 0,01) per bucket of water is recommended, as is elaborated on in *6.6.3 | Case-study on financial sustainability.* As the Water User Groups manage the water points on behalf of the communities, they should provide weekly or monthly reports to the whole community. This will give the communities the feeling that what they contribute is used in a correct manner, and that it is used for their benefits.

The water point is the community's property (and not the government's or a donor's property), so the Water User Groups have to take action themselves in order to improve their community's situation. WUGs can ask the District Water Department for the things they do not possess themselves, such as advice and technical skills. The District Water Department is by law obliged to support Water User Groups in the management of their water point (MWLD, 2002), so they should persist in their requests for support. If a Water User Group does not get the support it is entitled to by law, it should inform its District Councillor, the District Executive Director, the District Commissioner, or the media. Communities should not keep quiet, nor give up. In the water supply sector in Sengerema District, development is merely in their own hands.

7.3.2 | Recommendations to the District Water Department

Before a list of practical advice for the District Water Department is presented, the researcher will start with one overarching remark. In a water sector where community management is the predominant model, Water User Groups are the essential entity for long-term sustainability. Therefore, investing in the WUGs has to be the District Water Department's main strategy. The technicians of the DWD will become so to speak *mentors* of the Water User Groups.

Concerning the construction of new water points, the DWD has to make sure that the communities are involved from the beginning. Meanwhile, the performance of the existing Water User Groups has to be improved using the earlier mentioned *Five-Step Model for improvement of existing water points.* Regular - not only at the beginning - training and education, advice on procurement of a new water point or spare parts, regular contact with the Water User Group concerning financial management[54], regular monitoring of the water point, and major repairs are the general tasks of the water technicians. For regular training, contact and monitoring, the District Water Engineer is advised to design a schedule. Currently, communities are only visited when there is a problem. Regular contact by phone as well as regular visits will prevent minor problems from developing into major problems. Water technicians should visit the WUGs for a check of the books, the water meters and the account. In these moments, they can encourage them, advise them, and train them to be transparent. A technical sub-committee - consisting of two or three members - within

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54 Concerning education on and supervision of the opening and use of a bank account, as well as bookkeeping and financial reporting, the District Water Department could take advantage of the knowledge of the District Department for Community Development.

the Water User Group has to be trained and provided with the necessary basic tools.

Specific attention has to be given in this section to legal registration of the Water User Groups. As not even one Water User Group is registered at the moment the District Water Department is advised to make serious work of this[55]. Registration serves various goals – transparency, ownership, the DWD becomes to know the WUGs, the moment of registration can be used for education and awareness raising, it is necessary for opening a bank account – and is obliged by the Ministry of Water. Indeed, as the District Water Engineer already mentioned in one of the interviews, the communities should be convinced that there is something in it for them as well. As according to the law the WUGs that are registered are the only official ones, the District Water Department might reward the ones registered by giving them priority in service. Rewarding of Water User Groups that perform well is a general recommendation as well. The good examples can be used to show other villages what is expected from them, and – even more important - that good water management is within reach. Concerning accountability, the District Water Department is advised to facilitate accountability from the end-beneficiaries. An easy way for Water User Groups and communities to give feedback might help the District Water Department to improve its performance. Concerning the occurrence of theft of pumps, a very practical solution might be to 'stamp' the pump and its parts with the name of the village or the name of the water point. This will make it much more difficult to sell stolen pumps and stolen spare parts.

As the fact that communities are not aware of the activities and planning of the District Water Department leads to serious hindrance for communities' own initiative[56], the DWD is recommended to publish its planned activities and expenditures to Sengerema's citizens.

Lastly, concerning the DWD's human resources, it is recommended to educate and train the current employees. Besides, encourage them to improve their performance, give them responsibility, reward the good ones, think about punishment for under-performance. As mentioned in sub section *6.2.2 | District Water Department*, the District Water Department makes use of a very flat organizational structure. All employees receive their orders directly from the Engineer, who is also the one they are directly accountable to. This means that the work is seriously disrupted by the frequent absence of the Engineer, caused by weekly, monthly and quarterly meetings at the district level and yearly meetings at the Ministry of Water in Dar es Salaam. A manager would be a welcome addition to the current team[57].

7.3.3 | Recommendations to the District Forum for Local Economy

The District Forum for Local Economy does not play an active role in the water sector in Tanzania. However, as water might be considered an economic good and it definitely plays a role in economic development of an area, the DFLE is recommended to get involved in Sengerema's rural water supply. As there are already several actors in this sector, it would be best if the DFLE investigates if there are any gaps in the system that could be fulfilled by the DFLE, instead of performing somebody else's job.

The earlier discussed poor accessibility of spare parts[58] might be the first opportunity for the DFLE to facilitate the improvement of Sengerema's rural water supply. The research advises the DFLE to upgrade the current BDS-shop in Sengerema to a spare part centre for the whole district. Sales of spare parts in the neighbourhood will increase repair and rehabilitation of broken water points, which is an easy and relatively cheap way to improve the water point coverage of the district.

A second option, that needs a serious investigation first, is the provision of loans to Water User Groups, so that they can purchase a water point. The DFLE contributes already significantly to Local Economic

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55 This task has to be accomplished in cooperation with the District Legal Officer.

56 See for more explanation *6.4.2 | Transparency in the communication from the government to the communities.*

57 In management studies, a distinction is made between a *manager* and a *leader*. "Managers do things right, while leaders do the right thing" (Pascale, 1990). The District Water Engineer is a leader. He is busy with vision, long-term plans, preparing and discussing the budget for next year, etc. What currently is lacking, is someone who distributes the tasks among the water technicians, who supervises the technicians in their tasks, and who oversees what has to be done this week in order to reach the target for the year. A manager would be able to take on these responsibilities.

58 See chapter *6.4.4 | Poor accessibility of spare parts.*

Development (LED) in the district by providing loans to economic groups. During the research, the idea arose to provide loans to Water User Groups as well. The loan will be paid back through the collection of user fees. Several particular circumstances of Water User Groups have to be taken into account, but when a good model is developed, loans to WUGs can be a catalyst for improvement of the water supply in Sengerema District, which subsequently can contribute to economic development.

In order to keep water on the DFLE's agenda, it is recommended to add one cluster on water to the thirteen clusters that already exist. The representatives of that cluster could investigate other opportunities for adding value to Sengerema's water supply. Besides, this can be a place where accountability from bottom-up is institutionalized, as the representatives are able to bring the suggestions and requests from the grassroots to the district's policy makers.

7.3.4 | Recommendations to SNV Netherlands Development Organization

SNV Netherlands Development Organization is advised to make maximum use of their strength and core business, which is capacity building. SNV's support to District Water Department in registration of Water User Groups could be of lasting value for the professionalization of Sengerema's water sector. Registration without capacity building - without attention for education, awareness raising and a transfer of ownership - bears the risk of being not more than useless bureaucratization.

Three actors in the water sector are eligible for receiving a form of capacity building from SNV: the Water user Groups, the District Water Department, and the District Forum for Local Economy. Concerning the first group, SNV might play a role in the organization of accountability from bottom-up. An insight in the limited financial capacity of the District Water Department to improve Sengerema's water supply might help the Water User Groups to climb out of their passive role of sitting, waiting and wishing. However, then there has to be somebody who supports and advises them in coming into action. At the District Water Department, somebody is needed to 'train the trainers'. SNV could take up the responsibility for education and training of the water technicians. A third option is that SNV will strengthen the District Forum for Local Economy by providing them with training on accountability issues, on community development, on local governance, etc.

In conclusion, SNV as well as other donors is recommended to involve Sengerema's district government in all its plans and activities. Bypassing the government in order to avoid bureaucracy and corruption appears to be efficient on the short term, but will not be sustainable on the long term. In the end, the district government is the one to provide post-construction support to the Water User Groups.

EPILOGUE

From the earliest beginning of this research, it has been my intention to contribute to the improvement of Sengerema's citizens' daily life. The first way to do this was the field research, in which thirty Water User Groups have been visited. After the interview, they were educated on the management of their water point, motivated to take care of it in a proper way, and encouraged to start with the collecting of user fees as soon as possible. In some cases, the response was overwhelmingly positive. Some of the WUGs and village leaders directly decided to plan a village meeting for the next day, in which they would discuss the options of the collection of user fees and the option of requesting support from the District Water Department or District Forum for Local Economy.

Secondly, the many in-depth interviews with stakeholders – in particular the District Water Engineer and members of the District Forum for Local Economy - as well as the presentations that have been given to the District Water Department, the District Committee for Education, Health, and Water, and the Full District Council, might have affected Sengerema's water supply sector in a positive way. A report was distributed among stakeholders, as an inspiration and reminder for those with the capability or the position to change the situation.

However, the action that development organization SNV undertook following the presentation of the research findings could probably be seen as the most sustainable result of this research. As from May 2010, SNV decided to get involved in Sengerema District by providing support to the implementation of Tanzania's new water law. In practice, this means that SNV supports with registration and strengthens the Water User Groups with trainings on maintenance, accounting, cost recovery etc. SNV hereby facilitates the improvement of water coverage in Sengerema District.

I am very grateful for these promising developments in Sengerema District. I would like to conclude this thesis by wishing the Water User Groups, the District Water Department, the District Forum for Local Economy and the experts of SNV Netherlands Development Organization all the best in their efforts for improvement of Sengerema's rural water sector.

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APPENDICES

Appendix I: List of people consulted

Eng. Andrew	Engineer WEDECO (Water and Environment Development Company)
Mr. Butoto	Focal person DFLE, former District Water Engineer
Gregory, Andrew	District Legal Officer
Kerenge, Ruth	Community Development Officer
Kione, Christoffel	Assistant District Water Engineer
Lukonge, Ally	DFLE Member, cluster SACCOS
Mr. Magiri	Vice Chairman of the District, Sengerema
Maganga	SNV
Malisa, Elikalia Eduard	District Water Engineer
Misana, Ephransia	DFLE Member, cluster Women
Mrs. Mwanasha	General manager WEDECO (Water and Environment Development Company)
Nkanwa, Wallece	Regional Water Engineer, Mwanza Region
Pigishina, Barnabasi	Water Technician, District Water Department
Shigulu, Joseph Simeon	Member of DFLE
Van Klinken, Rinus	Portfolio-coordinator SNV Lake Zone, Tanzania
Watson, Mkanjilwa Mwalinga	Community Development Officer

Appendix II: Rural water supply in Tanzania

Table 3.6: Component 2 Rural Water Supply

SN	Indicator	Unit	Baseline 2006	Actual 2007	Actual 2008	Actual 2009	Target 2012
2.1A	New community water points constructed	Nos.	2,427	2,949	3,751		37,400
2.1B	Rehabilitated community water points	Nos.	670	711	1,123		4,500
2.2	Water committees legally registered	Nos.	11	14	42	65	TBD
2.3	Districts with DWSTs	%	100	100	100	100	100%
2.4	Districts with fully-staffed DWE's Office	Nos.		10	12	15	100%
2.5	Districts with WSS Plans	%	0	0	0	Note A	100%

Note A - WSS Plans will be prepared through consultancy contracts for all districts during FY 2009/2010

(MWI, 2009)

Appendix III: Report provided to stakeholders and representatives of the wards

Findings and Recommendations

Research	*Support to Community Management of Water*
Location	*Sengerema District, Mwanza Region, Tanzania*
Period	*February - May 2010*
Researcher	*Stefano Werner Pals*

The following findings and recommendations are based on the information gathered during extensive desk research, 28 semi-structured interviews with Water User Groups and 18 interviews with experts and stakeholders.

The Law

Since 2002, according to the National Water Policy, "communities will be empowered to initiate, own and manage their water schemes including water wells". The role of the District Government is to provide support.

The Water Supply and Sanitation Act, 2009, prescribes that all Water User Groups should be officially registered as legal entities.

The Situation of Water

According to a WaterPointMapping Study (GeoDataConsultants 2008), there are 348 waterpoints in Sengerema District. At the time of the study in 2007, 174 of them were not functional.

During the time of research, the water coverage of Sengerema District is about 56%.

- - - Findings - - -

Findings on Water User Groups

Water User Groups are in general elected by the water users and they perform their functions voluntarily. They are almost without exception gender-balanced, and although in some villages their term is restricted to maximum three or five years, in many other villages there is no limit. Their main responsibilities consists of cleaning the waterpoint, maintenance and minor repairs, supervision during fetching, guarding during the night and collection of money.

Findings on Financial Sustainability

The majority of the communities is not used to pay for water. 'Water for free' has a negative influence on the feeling of ownership and is a serious threat for long-term (financial) sustainability of the waterpoint.

The majority of Water User Groups did not open an account, or opened an account because they were told to do so, but they don't know how to use it.

In spite of the fact that currently most communities are not used to pay for their water, a large group of them emphasizes that they are willing *and* able to start paying per bucket (20 Tsh) or to collect once a fixed amount per household (1000 Tsh).

Problems

All communities mention that they (sometimes) experience problems with their water supply. However, the degree of problems varies significantly.

- In many villages the pump is stolen. However, a lot of communities still do not protect their waterpump well.
- In a significant number of villages, the well does not provide (sufficient) water during the dry season.
- Waterpoints breakdown on average once or twice in a few years time.
- In some communities, the water is not safe and clean.
- When their waterpoint is not functioning, communities often have to walk large distances in order to find water.
- The number of waterpoints is often not sufficient for the number of people in a village.
- Communities complain about long queues and long waiting time when they fetch water.
- Not all communities treat their water before they use it.

Findings on Support

A large number of Water User Groups received training from HESAWA / the District Water Department after construction of their waterpoint. This first training has been very useful, but unfortunately they have not received any training or education ever since (although the composition of WUG-members in most cases has changed).

More than half of the Water User Groups claim that they don't receive support from the District Water Department, many of them say that there is no communication at all between them and the government.

Whereas in other countries has been found that other entities (NGO's, churches, local companies, nearby municipalities) sometimes provide support when the government does not, it turns out that this is not so much the case in Sengerema District.

Striking is the fact that, although all communities need some form of support, a lot of them never asked for. They say that they don't know where to go for support, but a lack of awareness and a little bit of lazyness appears to play a role as well.

Beside the fact that almost all communities ask for more waterpoints, in particular regular monitoring and communication as well as training and education are expected to lead to a significant improvement in the situation of water supply in the rural areas.

For communities, it is not clear what kind of support the District Water Department will provide and when. Every year, 200 Water User Groups are waiting and hoping that they will be one of the four lucky villages in which a new waterpoint will be constructed.

As a result, they do not take action themselves.

Findings on District Forum for Local Economy / Jukwaa la Wadau

Only a few of all the interviewed Water User Group-members had heard of the Jukwaa la Wadau before. Notwithstanding the fact that the Jukwaa la Wadau is a multistakeholder-forum that brings grassroots and government together, it seems to be rather unknown on the grassroots-level.

However, it seems that the Jukwaa la Wadau could play a very important role in the development of Sengerema District.

- - - Recommendations - - -

Recommendations to the District Water Department / Idara ya Maji
- Improve the administration – e.g. Update the WaterPointMapping study from 2008, in order to know exactly where the waterpoints are, which are non-functional and why; make sure that you know who the Water User Groups are and that you can reach them (telephone numbers).
- Start communicating with the Water User Groups. Make sure that they know where to go for questions and support (address and telephone number District Water Department) and make sure

that you can reach them whenever you want (telephone number) in order to check what the status of their waterpoint, their bookkeeping and their account is.
- Support and train communities in opening and using an account, and bookkeeping. If necessary, the Department of Community Development can assist in this.
- Monitor regularly. Monitor their financial situation (bookkeeping, account) as well as their waterpoint (clean, fench, maintenance). When you monitor regularly, you can recognize and solve small problems before they become big problems. An idea could be to make WUGs responsible for submitting a little report every month, which can function as a checklist.
- Be transparent and clear on the kind of support you are going to provide, and the roles and responsibilities that communities themselves have.
- Let the communities themselves pay for spare parts, reparations, fuel of technicians. That will make them aware of the fact that they themselves are the responsible owners, it proves the necessity of collecting user fees and having an account, and at the same timen the pressure on the limited budget of the District Water Department will be lightened.
- Encourage the communities to choose a name for their waterpoint, instead of Kwa Hesawa. This will increase their feeling of ownership.

Recommendations to the District Forum for Local Economy / Jukwaa la Wadau
- Add one cluster on water to the Jukwaa la Wadau. This will improve ownership and awareness at the grassrootslevel, which both will contribute to sustainability of water supply. Besides, this will be the place where the (representatives of) the Water User Groups can bring their requests and where their voice will be heard (accountability from bottom-up).
- The Jukwaa la Wadau contributes significantly to Local Economic Development in the district by providing loans to economic groups. During the research, the idea of providing loans to Water User Groups came into existence. In villages where the pump is stolen, the Water User Groups can buy a new pump and by collecting user fees they are able to pay back the loan. Several particular circumstances of Water User Groups have to be taken into account, but when a good model is developed, loans to WUGS can be a catalyst for improvement of the water supply in Sengerema District, which subsequently can contribute to economic development. I would recommend the Jukwaa la Wadau to further develop and fine-tune the idea of providing loans to Water User Groups.

Recommendations to the District Legal Officer / Mwanasheria
- Registrate the Water User Groups (in cooperation with the District Water Department)
- Provide the necessary education on their rights and obligations, and make sure that they are very aware that now they are registrated, they are really the responsible, official owners.

Recommendations to the District Councillors
- Accountability from bottom-up turned out to be very little or lacking at all. Make use of your role as representatives of the people, and keep the District Government responsible.
- Assist the District Water Department by providing them with up-to-date information about the situation in your villages when the communities do not communicate themselves.

Recommendations to the communities
- Take ownership. First and above all your waterpoint is your property; you are responsible!
- Start using your waterpoint as an economic good. Start contributing a certain amount of money (e.g. 20 Tsh) per bucket.
- Take action yourself, and try to improve your situation yourself as much as possible. Ask the government for the things you cannot contribute yourself (technical skills).
- The District Water Department is responsible to support you. If they don't, or you are not satisfied with the support you get, let your voice be heard. Keep asking them for support (Gospel of Luke 18,

verse 2-5, Bible).
- If they still don't give you support, inform your District Councillor, the District Executive Director, the District Commissioner, the Regional Water Engineer or the media. Don't keep quiet, don't give up.

Recommendations to the District Executive Director
- The District Executive Director has the final and overall responsibility. I would recommend her to supervise the whole process and regularly monitor if adjustments and improvements have taken place.
- In particular, I would like to emphasize the promising role the Jukwaa la Waday can play in the situation of water, and I would advice to strenghten their position within the district.
- Besides, I mention the lack of accountability from bottom-up as a potential threat for sustainable development.

Recommendations to SNV / Netherlands Development Organization
- Provide demand-driven support to Sengerema District.
- Capacity building (awareness raising, education, 'train the trainers') is needed, both at government level as well as on the grassroots.
- SNV could play a role in developing and carrying out the process of registration of Water User Groups.
- Strengthen the Jukwaa la Wadau by providing them with training and education (a.o. on accountability issues).
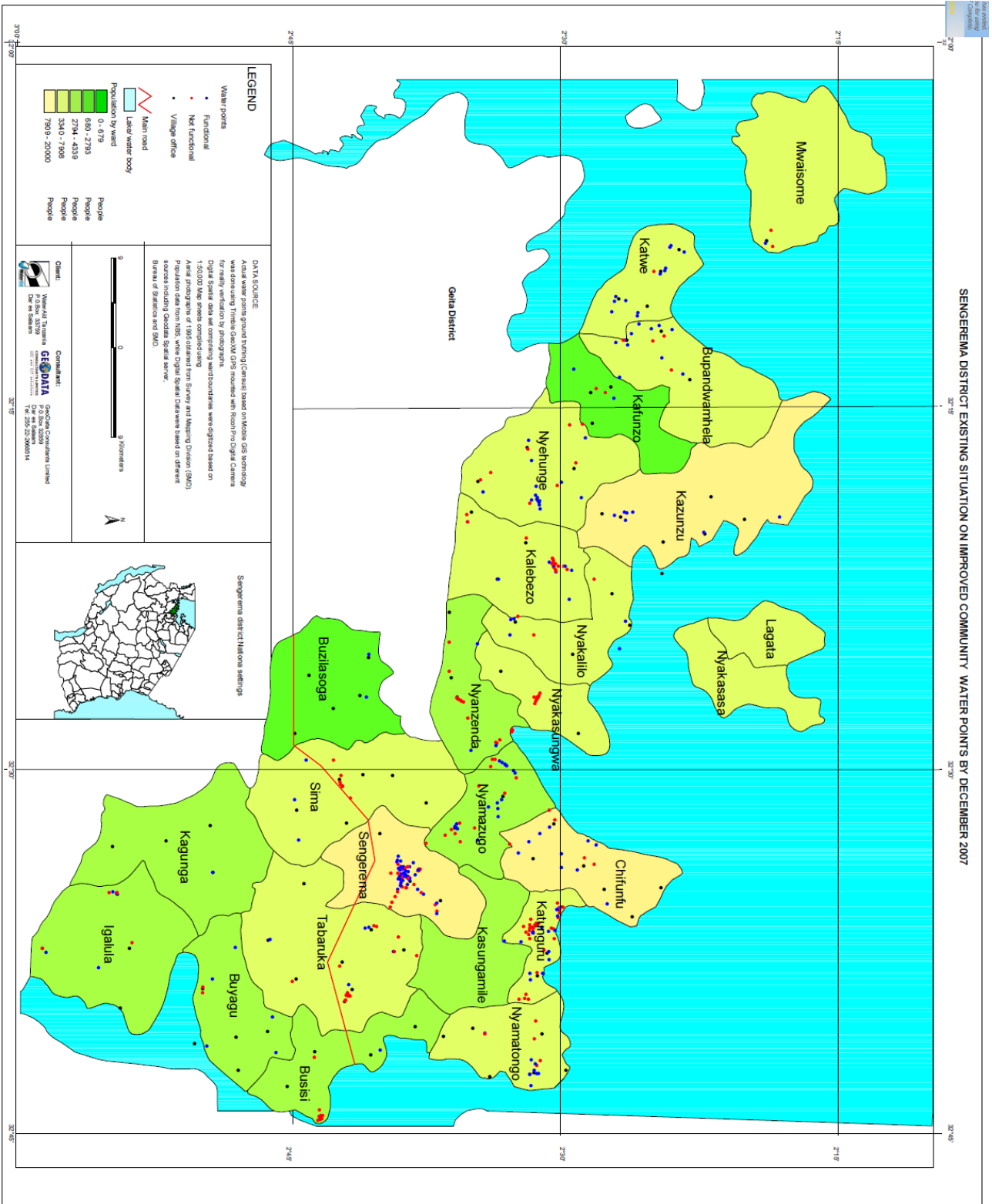
Appendix IV: Performance in full water point coverage per ward
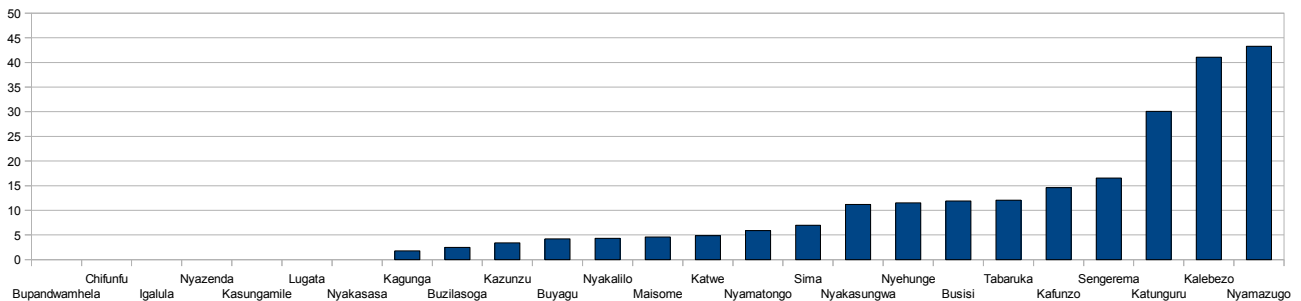
Source: the author
Based on GeoDataConsultants, 2008

Appendix V: Map of Sengerema District, including the names of the wards

SENGEREMA DISTRICT EXISTING SITUATION ON IMPROVED COMMUNITY WATER POINTS BY DECEMBER 2007

Appendix VI: Interview Questions

Present:
Date of interview:

Introduction

My name is Stefan Pals. I am from Holland. I am a Masters student at Utrecht University. I am doing a research on Support to Community Management of Water.
This is my research assistant: Romani Tano.
Thank you for your time. Please feel free to ask also questions to me, and please ask for explanation when a certain question is not clear to you.

General

1. Ward:

2. Village:

3. Sub-village:

4. Water Point Name:

5. By whom is the waterpoint managed? Who is responsible?

6. If it is a Kamati, how many members? How many men and how many women?

Water Point

7. What kind of Water Point? (shallow well, borehole, hand pump, rain water harvesting tank, improved spring) (single communal standpipe, multiple communal standpipe, hand pump, dam, improved spring) (shallow wells, hand drilled tube well, machine drilled bore hole, dam, spring, rainwater harvesting, river/lake)

8. Functional or not? If not functional, for how long and what is the reason?

9. Alternatives if not functional?

10. What is the number of households that depends on this water point?

11. Name of extraction system? (Nira/Tanira, Mono, SWN80, Gravity, KSB, India Mark II, Windlas, Afridev, Cemo) (Submersible, Gravity, India Mark I, Climax, KSB, Walimi)

12. Who is the owner of your water point?

    (NAWAPO 2002: Legal registration of water user entities will be instituted to ensure that communities are the legal owners of their water supply schemes including water wells)

13. Did the government communicate to you that you are the owner, and that you are responsible for your own water point?

Community involvement
Design and planning

14. What is the year of construction of your water point?

15. Did the community asked for a water point, or was it on initiative of the District Government / NGO?

16. Who was the constructor of the water point?

17. Was the community involved in the design and planning phase?
- place of water point
- technology
(NAWAPO 2002: Communities will be empowered and facilitated to make appropriate technology choices that suite them, particularly which require low investment costs and are least costly in operation and maintenance)

18. Did you received any help from the government in the design and planning phase? *(NAWAPO 2002: Communities may call on their district authorities for assistance in letting contracts including their preparation and supervision. (...) Design manuals will be reviewed and disseminated; Communities will be trained to acquire skills in letting and supervision of design and construction contracts)*

Construction
19. Was the community involved in the construction of the water point?
— labour?
— financial contribution? If yes, how much?

20. Who paid for the construction? (Community, LIVEMP, REDEP, ZAHANATI, CSPD, Mamlaka ya maji, Rubana, private operator, HAM, Mission, SDC, Idara ya kilimo, HESAWA, Mtakuja community, SDC and community, Idara ya maji, Musilim Community, TANZAKESHO, JICA, Nyamililo Genery, TLMP)

Operation & maintenance
21. Who is responsible for operation and maintenance?

22. Are there any operation & maintenance costs? If yes, who pays for it? *(NAWAPO 2002: For sustainability of water schemes, communities will be required to pay full operation and maintenance (O&M) costs and costs of higher service levels as well as to manage their schemes)*

23. Does the community has to pay for their water?

24. If the community pays, is it per bucket or a certain amount for a certain period? What amount?

25. How is the money collected?

26. Do you receive any help from the government concerning Operation & Maintenance?
— Training
— Education

Problems
27. Do you experience problems with regards to water supply?

28. What kind of problems?

29. What are the causes of these problems?

Breakdown

30. How often is there a breakdown? What are the causes of breakdown?

31. Who is responsible for repair?

32. What are the costs of repair?

33. Who pays for repair?

34. If your pump is not functional, have you ever thought about collecting the money to repair among the users?

35. How do you prevent your pump from being stolen? How do you protect it?

Kamati

36. What is the year of establishment of the Kamati? (Is it the same as the year of construction of the water point?)

37. What are the functions and responsibilities of the Kamati?

38. Do you have you roles, responsibilities, rights and limits on paper? *(NAWAPO 2002: Roles, responsibilities, rights and limits of authority of water user entities will be clearly defined)*

39. Is the Kamati elected by the villagers or appointed from above?

40. For how long are the members of the Kamati in function? Is there a maximum? How long is the current Kamati already in function?

41. Have they received any training or education?

42. Is it on voluntary basis?

43. How many hours will it take per week? Is the work divided equally among the members of the Kamati?

Support

District Government

44. Do you receive support from the District Government? *(NAWAPO 2002: Communities will be facilitated in acquiring technical and management skills)*

45. If no: is there any relation or has their been any contact with the government in the past years?

46. If yes: what kind of support do you receive / have you received from the District Government?

47. How often? On a regular basis?

48. Was the support focused on the functioning of the waterpoint or was there also training and/or education of the Kamati and/or the community included?

49. Do you receive only support when it is broken, or do they also monitor when everything is working properly?

Other support

50. Have you received support from other entities than the District Government? (NGO, church, LGA, private company)

Ask for support

51. Have you asked for support?

52. To whom?

53. How?

54. How often?

55. What was the reaction?

Needed

56. Are you able to manage your water point as a community independently?

57. If no, what kind of support do you need?

58. Do you need training or education? For what?

59. How often?

Payments

60. Suppose the government or another organization will construct a new waterpoint or will repair your old one... are you willing to pay then for your water? 20 Tsh per bucket? If no, 10 Tsh?

61. If yes, are the poorest people in your community also able to afford that amount of money per bucket?

District Forum for Local Economy / Jukwaa la Wadau

62. Do you know the DFLE / Jukwaa la Wadau?

63. If yes, do you think the DFLE / Jukwaa la Wadau could play a role in the improvement of water supply in the District?

Concluding

64. Do you have any questions or is there something else you want to say?

Thank you very much!!!

Name of waterpoint

Members of Kamati:

Jina	Jinsia	Tarehe ya kuzariwa	Kazi
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Jina na simu Village Executive Officer:

Appendix VII: Different extraction systems in Sengerema District

Frequency 2 Percentage 1%

Frequency1 Percentage 0%

Frequency12 Percentage 3%

Frequency 6 Percentage 2%

Frequency 22 Percentage 6%

Frequency 7 Percentage 2%

Frequency 19 Percentage 5%

Frequency 10 Percentage 3%

Frequency 49 Percentage 14%

Frequency 81 Percentage 23%

Frequency 139 Percentage 41%

Legend:
- Afridev
- Cemo
- Gravity
- India mark II
- KSB
- Mono
- Nira/Tanira
- None
- Others
- SWN 80
- Windlas
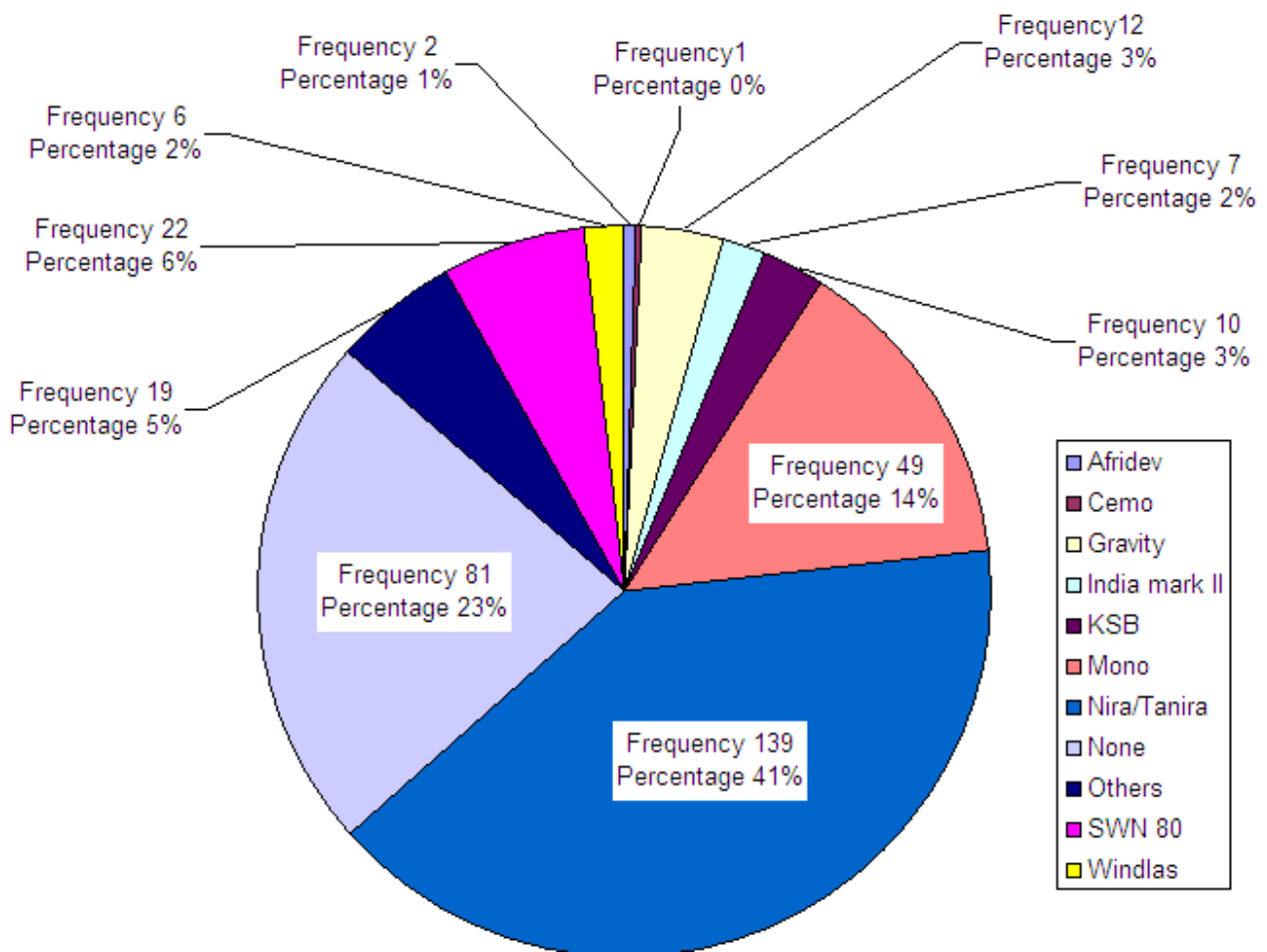
(GeoDataConsultants, 2008)

Appendix VIII: Official procedure of registration of COWSOs

after consultation of
- *the Water Supply and Sanitation Act, 2009*
- *the Legal Officer of Sengerema District (10.04.21)*
- *the assistant-District Water Engineer of Sengerema District (10.04.19)*
- *the District Water Engineer (10.04.21)*

- The community should come together in one meeting in which they discuss registration of the Community Owned Water Supply Organization (COWSO). A COWSO can be established by the majority of the members of a community (art 31).
  They must take minutes during this meeting and the people that are present must sign.

- The proposed members of the COWSO shall prepare a Constitution or Memorandum of Agreement, in the form that is set out in the Second Schedule of the Water Supply and Sanitation Act, 2009. Upon request, the Local Government Authority shall provide assistance in formulating the Constitution or Memorandum of Agreement (art 33).
  In this Constitution or Memorandum of Agreement is described
  - the names of the current members
  - the name of the chairman, the secretary and the treasurer
  - how long the members will be in function

  There should be 12 members; 6 men and 6 women.
  The members of the COWSO have to sign this Constitution or Memorandum of Agreement.

- They must submit this Constitution or Memorandum of Agreement to the Village Executive Officer for approval.

- After approval by the LGA, the chairman of the COWSO must go to the District Legal Officer. He must take with him:
  - a map of the area on which the area of responsibility of the COWSO is shown (Second Schedule).
  - The minutes of the village meeting in which the COWSO is elected.
  - The Constitution or Memorandum of Agreement (signed by COWSO-members and approved by VEO).

- The District Legal Officer will discuss the minutes of the meeting and the Constitution or Memorandum of Agreement with the chairman of the COWSO. If necessary, he will give some comments. *In case of serious comments, the chairman of the COWSO has to go back to his village, adjust, get another signature of the LGA and then he can go back to the District Legal Officer.*

- The District Legal Officer registrates the COWSO in accordance with the procedure that is prescribed by the Minister and published in the Gazette (art 34).

- The District Legal Officer has to approve and sign the document of registration. After that, the District Executive Director and the District Chairman have to sign the document of registration.

- After registration, the COWSO receives a certificate.

- With effect from the date of registration all water consumers within the area of a community organisation shall be required to pay such charges as may be levied for the provision of water supply (art 34).