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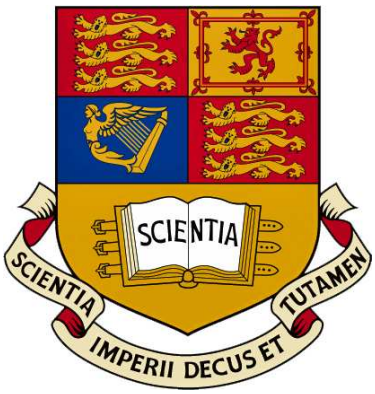

STRATEGY COMPARISONS OF IMPLEMENTATION OF WATER SUPPLY POINTS AND THEIR SUSTAINABILITY IN TANZANIA:

A review of alternative approaches to the sustained provision of water supplies in Tanzania

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To Ana, for her patience

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Abstract

Rural water supply programmes in developing countries frequently fail to deliver benefits to society over the long term, mainly because of the approach used by the donors, which emphasises the technical aspects and fast production of new facilities, while sidestepping participatory issues and community empowerment.

In response to the poor performance of water schemes and the prevalent high rate of non-functionality, the Government of Tanzania has developed a comprehensive policy framework, based on the principle of devolution by decentralisation, where the responsibility moves from the central government to local authorities and communities; and on cost-recovery. Similarly, it has launched an ambitious national programme to improve the access to reliable and sustained water supply services for the rural population; and achieve, in a twenty-year period, the service targets set by the Millennium Development Goals.

The study first seeks to understand three different strategies to implement water and sanitation projects on a sustained basis. It is not a comparison, but a thorough analysis to identify their specific strengths and weaknesses.

In the light of the implementation of the national Programme, the study proposes a set of recommendations to tackle its sustainability: clear understanding of the existing problems, the beneficial impacts achievable, and the factors which determine sustainability. Sound strategies for community water supply interventions should be based on the following key aspects: appropriate institutional framework; promotion of an effective Integrated Water Resources Management, provision of capacity and resources at district level to monitor and supervise the ongoing and completed projects; creation of democratic and inclusive water management entities to ensure cost-recovery; effective community participation to foster long-term operation and maintenance; and enhancement of the private sector to satisfy specific goods and services to both communities and local authorities.

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ACRONYMS AND ABBREVIATIONS

BWO	Basin Water Office
CBO	Community-based Organisation
COWSO	Community-Owned Water Supply Organisation
DAWASA	Dar es Salaam Water and Sewerage Authority
DC	District Council
DP	Distribution Point (Waterpoint)
DST	District Support Team
DWST	District Water and Sanitation Team
EU	European Union
GIS	Geographic Information System
GoT	Government of Tanzania
INGO	International Non-Governmental Organisation
ISF	Ingeniería Sin Fronteras – Asociación para el Desarrollo
IWRM	Integrated Water Resource Management
KPI	Key Performance Indicator
LGA	Local Government Authority
LGRP	Local Government Reform Programme
LNGO	Local Non-Governmental Organisation
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MIS	Management Information System
MKUKUTA	Mkakati wa Kukuza Uchumi na Kuondoa Umaskini Tanzania
MoHSW	Ministry of Health and Social Welfare
MoU	Memorandum of Understanding
MoW	Ministry of Water
NAWAPO	National Water Policy
NGO	Non-Governmental Organisation
NPRS	National Poverty Reduction Strategy
NRWSSP	National Rural Water Supply and Sanitation Programme
NSGRP	National Strategy for Growth and Reduction of Poverty
NWSDS	National Water Sector Development Strategy
O&M	Operation and Maintenance
PORALG	President's Office for Regional and Local Government

PRSP	Poverty Reduction Strategy Paper
PSR	Public Sector Reform Programme
RDP	Rural Development Policy
RDPS	Rural Development Policy and Strategy
RWSS	Rural Water Supply and Sanitation
RWSSP	Rural Water Supply and Sanitation Project
SWAP	Sector-wide Approach to Planning
UfW	Unaccounted-for-Water
UN	United Nations
UNDP	United Nations Development Programme
UWSA	Urban Water and Sanitation Authority
UWSSP	Urban Water Supply and Sewerage Programme
VWC	Village Water Committee
WA	WaterAid
WA Tz	WaterAid Tanzania
WatSan	Water and Sanitation
WB	The World Bank Group
WP	Waterpoint (Distribution Point)
WRM	Water Resources Management
WRMP	Water Resources Management Programme
WSS	Water Supply and Sanitation
WSSP	Water Sector Support Project
WSDP	Water Sector Development Programme
WUA	Water User Association
WUF	Water User Fee
WUG	Water User Group

INTRODUCTION

Introduction

Over the last years, a significant number of water and sanitation projects have been implemented in developing countries, both in rural and urban areas, mainly covering water supply schemes, sewerage, sanitation infrastructure, wastewater collection, and disposal and treatment systems. Most of these interventions have been financed by international agencies (Banks, funding agencies and aid organisations). Despite the substantial support from donors, the fact remains that many water supply projects of the past have resulted in limited levels of sustainability; failing to deliver benefits to society over the long term.

The widespread failures have been attributed to a broad range of causes, but the major and basic reason is that water and sanitation (WatSan) projects have been seen as engineering projects, and as such, schemes have been designed and implemented in a manner that is too narrowly based on technical considerations, following the principle of 'design and build'. Thus, the emphasis has been on the fast production of new schemes focusing only on the engineering component, while social aspects have been sidelined. Water supply and sanitation (WSS) services are clearly much more than providing physical infrastructure, and as widespread failure shows, it is time to shift from projects to programmes, and from facilities to services.

In this respect, no blueprint exists to achieve sustainable services, since sustainability is a complex and dynamic concept, made up of many interrelated components. A number of aspects should be taken into consideration, and therefore, a holistic and flexible approach to planning, design, construction and ongoing operation is essential. Nevertheless, three important objectives of a water supply scheme are that it should be (Skinner, 2003):

- acceptable to the community (in relation to traditional beliefs and practices) and also acceptable from the environmental and health perspectives;
- feasible (i.e. suiting the relevant local, social, financial, technological and institutional factors); and
- sustainable (i.e. possible to reliably operate and maintain in the long-term with the available financial, human, institutional and material resources).

Finally, policymakers face a basic dilemma when designing WatSan policies (Therkildsen, 1988). A faster improvement of the water supply may reach more people in the short run, but the long term sustainability of activities is uncertain. In contrast, much slower improvements may perhaps be more sustainable in the long run, because they are the result of local commitments and capacity to plan and implement.

From 'free water for all' towards cost-recovery, through 'decentralisation by devolution'

In Tanzania, as in many other developing countries, the situation is far from being encouraging. The Government adopted in 1971 a policy aimed at providing all inhabitants with safe and affordable water within 400 metres of their dwellings by 1991, and the construction of new schemes and their ongoing operation and maintenance was to be a government responsibility. In the mid 70s foreign donors started implementing water supply programmes, aiming to improve water coverage albeit with negligible long-term effect. Facilities were rapidly built and then transferred to regional water engineers who had neither budget nor capabilities to operate them. These early efforts to of provide sustainable water supply and sanitation services, thus proved a failure.

In response to this unsustained situation, the Government introduced a new National Water Policy (NAWAPO) in 1991. Since then, Tanzania has been facing a transition from a socialist economy –based on the principle of 'free water for all'- to a more liberal economy where cost-recovery has become a necessity.

At present, more than 30 years later, the situation shows little improvement as providing safe water and improved sanitation while reducing the existing service coverage gap between rural and urban areas remains a challenge. A new policy framework has been recently developed, to define the appropriate strategy to achieve ambitious national sector-related targets, set in the Millennium Development Goals. The NAWAPO was revised in 2002, the National Water Sector Development Strategy (NWSDS) was formulated in 2004, and the Government of Tanzania launched in 2005 a new National Strategy for Growth and Reduction of Poverty (MKUKUTA), embarking on a process of 'decentralisation by devolution', with control over water service delivery moving to local government. Finally, a comprehensive Water Sector Development Programme has been developed to put water-related policies in a functional framework, and it is to be implemented through three national programmes, covering the sector areas of major concern: rural water supply and sanitation, urban water supply and sewerage, and water resources management.

In brief, the trade-off between short and long-term sustainability and coverage is confronted from a completely different perspective.

Same challenge, but with a different solution: water resources management. Given Tanzania's committed to the MDGs, the reduction of the population without access to WSS services by half by 2015 has become a top priority. Nevertheless, and though the nation is endowed with sufficient freshwater resources to meet all of its current water needs; it lacks both the ability to properly manage them and the adequate framework for tackling water issues. Tanzania is thus currently facing a complex water resources development and management challenge.

The stakeholders remain the same but are assuming different commitments. The Government's new role ('hands off, eyes on') is one of policy and guideline formulation, coordination, monitoring and regulation. In accordance with the principle of 'decentralisation by devolution', the management and coordination of the day-to-day activities moves to the local authorities, and since it is to be a demand-driven approach, community participation in all different stages has to be guaranteed.

The donors are also the same, but implementing their projects under the supervision of the Government. In the past, donor interventions often bypassed recipient organisations at national, regional and local level. At present, it is the Ministry of Water which is responsible for the execution of three ambitious programmes, funded by international agencies, in order to deal with water-related major issues: water resources and water supply and sanitation in both rural and urban areas.

Therkildsen conducted in the mid 80s a comprehensive study about the intervention of five international donors to improve access to safe water for rural population in Tanzania during the International Drinking Water and Sanitation Decade. The long-term sustainability of each different approach was assessed, and their achievements and failures highlighted. The conclusions of the study emphasized a dilemma between faster production of schemes on the one hand and a slower pace of production but the promotion of more sustained facilities through a participatory approach on the other.

The same history repeats itself.

There is evidence that Tanzania has currently adopted the second approach. Nevertheless, it is not without risk, since the challenge is not only to achieve the national targets, but to do it on a sustained basis.

The research questions

This study was firstly aimed at understanding the implementation approach of three different agencies involved in water supply and sanitation projects: The World Bank, as an inter-governmental agency, and WaterAid and Ingeniería Sin Fronteras, two aid organisations. The focus was on analysing their volume of intervention, their strategic aims; their implementing partners, indicators used to measure the efficiency of their activities; and on somehow identifying the strengths and weaknesses of each approach.

Nevertheless, based on the background defined above and once in the field, it was not difficult to realise that all three WatSan strategies were mainly dependent on their sustainability

approach, and that facilities able to provide long term benefits to beneficiaries (not only in the short run) was the critical goal to strive for.

Equally important, and as previously mentioned, Tanzania is facing ambitious challenges in the water sector, and the sustainability component will be essential to evaluate their final performance.

Therefore, this study seeks to analyse three different strategies of intervention in the water and sanitation sector, understanding their strengths and weaknesses on a sustained basis. Then, and through the key findings of each approach, this research concludes with an assessment about the sustainability of the government approach, identifies related risks and suggests other alternatives to be considered if the interventions are to be sustained.

Finally, the study is focussed on the rural context, and therefore WSS projects in urban areas are not included. Likewise, and although sanitation and hygiene promotion are currently integrated in water strategies, these two activities are somehow excluded, focussing thus on rural water supply interventions.

The specific purposes of this research can be described as follows:

- Which are the main components that affect sustainability?
- Which are the specific features of each donor strategy that determine their sustainability approach, and how sustainable are their interventions?
- Which are the main constraints that threaten sustainability?
- Which changes in approaches may improve the effectiveness of the government strategy, regarding the challenging implementation at national scale of the National Rural Water Supply and Sanitation Programme?

The research has partly been conducted in Tanzania; more specific in Dar es Salaam and in the regions of Kilimanjaro, Arusha and Dodoma. It is based on information from: interviews and meetings with technical staff from each donor; field visits to projects implemented by all three agencies and relevant interviews with their rural teams; interviews with staff from local authorities and from the Ministry of Water; unpublished reports from Tanzanian authorities and donors; published reports from these sources; and relevant related literature.

Report Outline

The report is organised in three different parts. The context and the theoretical framework of the study are introduced in Part One. Chapter 1 is specifically written to give a general overview of

water supply and sanitation issues in Tanzania. It first briefly outlines the water sector-related concerns, and then it introduces the existing water sector policy framework, needed to identify the roles and commitments of all the stakeholders involved in WatSan services delivery. The water supply sector problems and its key approaches are also discussed. Chapter 2 contains a brief description about sustainability issues, and provides the appropriate background to understand the approaches contrasted in this study on a sustained basis.

In Part Two, the strategies of intervention of all three agencies are presented – each chapter being structured in the same way. The title of each chapter captures a distinct feature of the approach used by each particular donor: WaterAid, the World Bank, and Ingeniería Sin Fronteras. Each case study can be read on its own, and some common features between two strategies are thus repeated and described twice.

The future challenges that the country faces in the water sector are stated in Part Three, and in accordance with sustainability issues, some recommendations are made based on real case studies in Tanzania and literature review. In the last chapter (Chapter 7), the key aspects of the study are highlighted to conclude the study.

PART I: WATER SUPPLY AND SANITATION OVERVIEW

1. INTRODUCTION TO WATER SUPPLY AND SANITATION IN TANZANIA

1.1. TANZANIA: WATER SUPPLY & SANITATION SECTOR ISSUES

Tanzania's high economic growth masks some structural weaknesses related to the management of an essential natural endowment - water resources, and the nation is currently dealing with a complex water resources development and management challenge. Unlike many of its neighbours, the Government asserts that the nation is endowed with sufficient freshwater resources (both ground and surface water) to meet all of its present water needs, being at least enable to ensure:

- water supply and sanitation services (WSS) as a fundamental basic need for all population, and
- the performance of key sectors of the economy (energy, agriculture, industry, livestock, mining, tourism, and fisheries), which are highly vulnerable to droughts, floods, and inappropriate management of water resources.

Nevertheless, water security remains an elusive goal in Tanzania, mainly because of:

- inappropriate investments in constructed water storage and other water resources infrastructure to buffer against the impact of droughts and floods (climate variability), and inadequate investments in pollution control;
- investments in costly but unreliable infrastructure;
- inadequate investments in water resources management systems, institutions, and regulations, which has created a climate of poor governance.

In essence, the key constraints to an effective sector development include the following (World Bank, 2007a):

1.1.1. Inadequate Water Resources Management Framework

The nation is divided into nine river and lake basins for the purpose of management of water resources, and although it has enough resources available, accessibility to water is uneven among regions, resulting in water scarcity in some river basins.

At the same time, the current platform for water resources management (WRM) remains inadequate, based on a weak policy framework, and being highly under-funded and under-resourced. It clearly has led to significant consequences on key sectors of the economy and on the livelihoods of many people. Similarly, other key issues that are to be addressed include (i) poor sector coordination; (ii) insufficient participation of stakeholders in river basin planning; (iii) inappropriate treatment of water as an economic good; (iv) conflicts among competing

users of water; (v) and to a lesser extent fragmented investments because of uncoordinated donor support.

Equally important, the weak and unclear water resources governance framework also has an important international dimension, as Tanzania is bounded by 5 lakes and several rivers that are shared by more than one nation. Its poor water resources governance contributes to social, economic, and environmental insecurity, since unilateral actions taken by neighbouring countries lead to unsustainable use of shared waters.

1.1.2. Low Water and Sanitation Services Levels [1]

In Tanzania, over 15 million people out of the current population of 35 million lack safe water supply, and although the sanitation coverage is reportedly high (90%), its ineffective use and poor hygienic practices remain as significant barriers to effective disease control and appreciation of health impacts. In addition, most water sector investments are not adequately maintained, and fail to deliver services to society soon after being handed over to their beneficiaries. The major difficulties to overcome in both urban and rural areas are:

- **Urban WSS**. At the beginning of 1997, urban water systems managed by the Ministry of Water (MoW) were handed over to independent and autonomous Urban Water and Sewerage Authorities (UWSAs), who were expected to meet operation and maintenance (O&M) costs. After 10 years, USWAs do not fully exercise their autonomy.

  In this respect, few authorities are replacing worn out equipment, and most still depend on donor aid or grants from the MoW for major refurbishments. Likewise, some UWSAs including DAWASA (Dar es Salaam Water and Sewerage Authority) have rationalised their approach to maintaining and repairing distribution network, and due to inadequate leakage detection facilities, responses are only made to visible leaks.

  At the same time, although most of the UWSAs Finance departments have computerised billing systems and only few are relying on manual systems, the average level of arrears in the UWSAs is high (at around 19 months of billings), most being owed by households, but many also by institutional customers.

  In addition, and despite the considerable progress in reforming urban public utilities made by the MoW, the service is in general unreliable, the water delivered often unsafe for drinking, and since population growth is putting pressure on existing infrastructure, households across all urban areas are on average spending more time to fetch water than they did 10 years ago. Furthermore, in many urban areas there are communities and groups

[1] Data from The World Bank (2007a)

who do not have access to utility water supply for a range of different reasons, including: (i) inability to afford household or yard connections; (ii) no services provided in unplanned areas; or (iii) the lack of an installed pipe reticulation, with no likelihood of it being installed in the near future. Also, in many urban areas the supply is somehow inadequate to serve the whole population.

With regard to sanitation, less than 10% of the urban population is connected to a sewerage system, and another 10% (20% in Dar es Salaam) use septic tanks, leaving the rest of the population dependent on pit latrines. Due to poor maintenance, most sewerage and waste water treatment facilities are not functioning; while pit emptying services are often inadequate (resulting in manual emptying methods and the related health risks).

- **Rural WSS**. Despite significant investment (mainly funded by international agencies) in the rural WSS sector since the 1970s, only about 50% of the rural population has access to reliable water supply service, and over 30% of rural schemes are not functioning properly. The Government has been the owner and operator of rural water supply systems, and it has led to a lack of commitment by communities to sustain their facilities. Likewise, implementation of projects and programs has been done through different approaches, resulting in overlaps of responsibilities and interventions that have not been cost effective. In addition, the existing water supply systems are unable to meet water demands. As a result, water-borne diseases prevail in rural areas, and productive time that has to be used to search for, collect and transport water.

  Similarly, since the provision of water service has been done without the active involvement and ownership of the beneficiaries, the service delivery has become unsustainable. Operation and maintenance (O&M) of water supply schemes has not reached the level of full cost recovery, and for handpump schemes, the availability of spare parts at the district level is not certain because they are not fast moving items in the market, which has led to malfunctioning of a significant number of the facilities.

  In consequence, most of the rural population still obtains its water from unprotected sources of doubtful quality; and during the dry season, women may have to walk long distances to fetch it.

  Sanitation in rural areas is also limited, and only a part of the rural population has access to traditional pit latrines. Incidence of water-related diseases is therefore high.

1.1.3. Inadequate Sector Coordination and Institutional Capacity

The sector still suffers from uncoordinated sector-wide and cross-sectoral planning and development, which results in treating water narrowly as a sector issue (i.e. water supply, sanitation, and sewerage) instead of addressing water as a high priority, central to the performance of many key sectors of the economy. Accordingly, many water-related policies are poorly aligned, while institutional and human resources' capacity remains inadequate at all levels.

Nevertheless, over the past two years there has been considerable debate about the need to coordinate all sector-related activities and, on a consultative basis with sector stakeholders, to move towards a Sector Wide Approach (SWAP), as a coordination mechanism which led by the government, should involve all the relevant agencies (government and development partners).

In brief, and to address these structural challenges, the Government of Tanzania (GoT) has embarked on a major reform process to develop an appropriate institutional framework. Similarly, significant sector-related policies have been recently launched, in order to tackle the specific constraints in the three areas covered by the water sector: water resources management, rural water supply and sanitation, and urban water supply and sewerage.

1.2. WATER AND SANITATION AS A PRIORITY SECTOR FOR POVERTY REDUCTION

There is evidence that the impact of deficient water and sanitation services falls primarily on rural population, and particularly, on the poor. Lacking access to public services, people in the rural and peri-urban areas have to often rely on non-protected sources, or pay excessively high prices to water vendors to inadequate water supplies. Likewise, it is also clear that people's health is not only dependent on the accessibility to an adequate water supply (regarding to quantity, quality and availability), but on sanitation and hygienic practices, since most of the water-related diseases can be transmitted by other routes. In some cases, for instance, too much emphasis is often put on providing high quality water at source, regardless it may easily become contaminated by poor collection, transportation and handling practice, if people do not have appropriate sanitation or hygienic habits.

In essence, the ideal target should be to eliminate all the problem components caused by lack of access to safe water or improved sanitation (Table 1.1), and this would be achieved by appropriate water and sanitation facilities, and hygiene education to support infrastructure improvements (Carter et al, 1999). Therefore, it is now accepted that water supply, sanitation

and hygiene promotion should be integrated and form the three foundation stones of water and sanitation projects. Nevertheless, it is also a fact that when this is done, sanitation and hygiene are often neglected in favour of water supply, receiving a small fraction of the interest and resources allocated to water.

Table 1.1

Components of the water and sanitation problem (Carter et al, 1999)

Aspect	Immediate Problem	Consequences
Water Supply	▪ Distant sources	▪ Much expenditure of time and energy (especially by women) ▪ Low levels of water consumption, resulting in water-washed disease
	▪ Unreliable sources	▪ Time spent queuing or seeking alternative sources
	▪ Poor quality sources	▪ Water-borne disease
Excreta Disposal	▪ Lack of safe facilities for disposal of human faeces	▪ Contamination of soil, surface water and groundwater
	▪ Little privacy for defecation, and lack of water for anal cleansing and hand-washing	▪ Defecation (by men) in open, often near water; hardship for women for whom public defecation is unacceptable
Wastewater disposal	▪ Engineered facilities for treatment or safe disposal rarely exist	▪ Indiscriminate disposal leads to environmental contamination, insect habitat creation, and/or unsafe re-use downstream

It seems clear that time saving, health improvement, provision of privacy, and environmental protection should be the desirable aims of water and sanitation programmes (Carter et al, 1999), although other related benefits may also be achieved (WaterAid, 2001):

- Livelihood: Access to a reliable and affordable water supply, at a reasonable distance, helps people (especially women and children) to save their time, energy and money for other income generating activities.
- Social interaction: To reduce walking distances and therefore time spent fetching water increases the quality of time available, mainly used for family interaction, and for attending social obligations, religious rites and customs.
- Psychological stress: The easy access to water from home contributes to the reduction of both men's and women's psychological stress (fear of wild animals, sexual harassment and

uncertainty over the availability of water induced high levels of stress for women and their families).

- Hygiene/Health: A significant impact in the incidence of water-related diseases, especially in children, is achieved if not only water, but sanitation services are provided and hygiene promoted.
- School attendance: Water availability in the community significantly contributes to improved enrolment, punctuality and attendance, particularly for girl children.

In Tanzania, most of the sanitation initiatives implemented in the past in order to expand sanitation facilities failed to be sustained; and currently, responsibilities for sanitation are still undefined. The MoW is responsible for sewerage, but not for on-site sanitation, and the Ministry of Health and Social Welfare (MoHSW) should thus assume the sanitation lead and promote 'latrine construction' campaigns, while providing guidance and advice on community health education and cleanliness.

In urban areas, sanitation problems are more pronounced. Piped sewerage systems cover less than 10% of urban households, and the majority of urban population use on-site solutions, predominantly pit latrines. In poorer areas, houses are often rented and there is thus low incentive and little physical space to build latrines, resulting in residents sharing latrines or disposing faeces as best they can.

1.3. WATER SUPPLY COVERAGE, ACCESS AND EQUITY

Shortly after independence, in 1971 Julius Nyerere's government launched a policy of "free water for all". Central government took the responsibility from local governments to construct, and later operate and maintain all the water facilities. In the mid 70s, foreign donors started developing water supply programmes in specific regions, largely bypassing government structures, and playing a significant role in the planning and implementation of this policy. During this decade and the following International Drinking Water Supply and Sanitation decade in the 1980s, considerable efforts were made to improve water coverage, albeit with negligible long-term effect. Since there were no specific criteria in the selection of new areas of intervention, stark variations developed, and still remain, at regional and district level with regard to access to safe water.

In 2002 the Government carried out the last 'Population and Housing Census', reporting that 42% of rural households and 85% of urban households have access to improved water supply, meaning that their main source of drinking water is either from a piped supply, protected well or spring.

1.3.1. Rural Regional differences

In rural areas, the following patterns are visible (WA Tz, 2005b):

- In 7 districts, fewer than 10% of rural households have access to improved water supply: Sikonge (4%), Igunga (5%), Kishapu (9.6%), Liwale (8%), Mkuranga (6%), Rufiji (9%) and Mafia (3%)
- In 4 districts, more than 80% of households have access to improved water: Arumeru (82%), Mwanga (82%), Kyela (83%) and Rombo (93%).
- In 63% of the districts, less than 50% of households have access to improved water supply.
- The more served region is (by far) Kilimanjaro Region, where 74.4% of households have access to improved water supply, while the least served regions are Pwani (14.7%) and Tabora (11.8%).

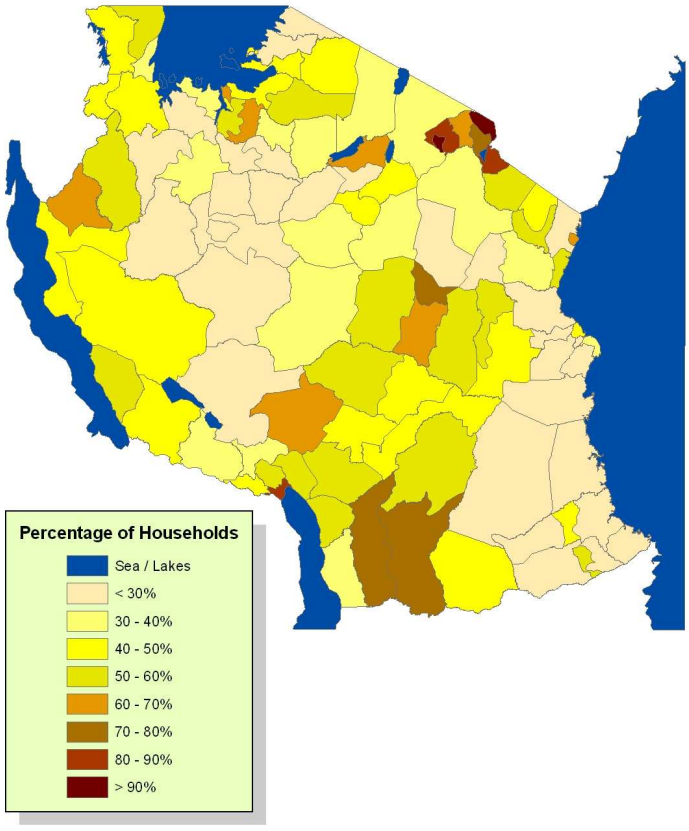

Figure 1.1. Rural Households using improved water sources as their main source for drinking water (WA Tz, 2005b).

The unequal distribution is mainly due to the weak control of the government over the donor funded WSS projects in the last three decades, since improved access to water is somehow correlated with large-scale government and international investment (WA Tz, 2005b).

Likewise, another aspect is the water resources availability and the relative technical difficulties to supply water in specific areas (lack of water resources or complex technology to be used to reach the source), since many of the districts with higher rates (e.g. Kilimanjaro, Mbeya and Marogoro) are areas with groundwater available (at least in some parts), and where the technology used is gravity systems (easy to build and maintain).

1.3.2. Urban Regional differences

Urban data can be further split into Dar es Salaam and other urban cities. The main aspects to be identified include (WA Tz, 2005b):

- Dar es Salaam has the highest percentage of households using improved sources (91.7%).
- 84% of households in urban areas (other than Dar es Salaam) get their water from improved water supplies.
- In Urban areas of 9 districts, fewer than 50% of households have access to improved water.

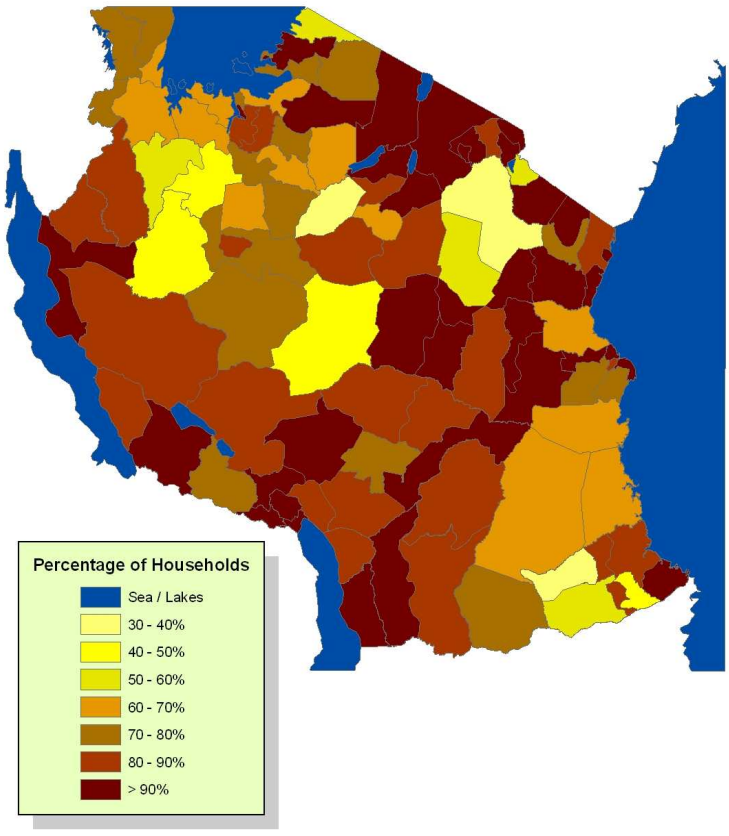

Figure 1.2. Urban Households using improved water sources as their main source for drinking water (WA Tz, 2005b).

The reasons to explain these regional differences are varied depending on the area (WA Tz, 2005b). In some districts (e.g. Kigoma Rural (22.6%) in Kigoma Region; Lindi Rural (48.3%)

in Lindi Region), urban areas are a result of urban expansion into rural districts, but without a parallel expansion of municipal water supply services. In others, (e.g. Kahama (41.3%) in Shynianga Region; Nachingwea (35.7%) in Lindi Region) there are long established with persistent and unresolved water supply problems.

1.4. WATER POLICY IN TANZANIA

1.4.1. Overview

Rural drinking water supply came high on the agenda in Tanzania in 1971, when the Party declared that by 1991 all population (both rural and urban) should have access to safe water within easy reach of their homes. Since then, Tanzania has been facing a transition from a socialist economy -where water provision was entirely the responsibility of the state- to a more liberal economy where cost-recovery has become a necessity.

In this respect, the last three decades have been characterized in the rural sector by considerable efforts to construct new water schemes and improve service coverage, albeit shortly after being handed over to the beneficiaries, facilities often ceased to function. Donors built and then transferred infrastructure to regional water engineers who had neither budget nor capabilities to operate these water supplies.

The Government's response to the failure of providing adequate water supply and sanitation services, despite these major investments in the sector during the 1970s and '80s, was to introduce a new National Water Policy in 1991, that emphasised community empowerment and control, but paid little attention to cost-recovery, sector coordination, and decentralisation (poor definition of the roles of the key stakeholders at local, district and national level). The "free water for all" policy was officially ended, and policy development for the water sector began.

The National Water Policy (NAWAPO) was revised in 2002 on a sustained basis, thus introducing reform elements of devolution, poverty alleviation and civil service reform. It is strongly influenced by national policy instruments that address issues of poverty and economic development, and incorporates water sector reforms as one of several related components which, when combined, offer a multi-sector approach to poverty reduction and economic growth.

Key policies such as the 1997 National Development Vision 2025 sets the stage for the Poverty Reduction Strategy Paper (PRSP, 2000), which is supported by the Local Government (LGR) and Public Sector Reforms (PSR), undertaken by the Government with the aim of redefining the role of government and mainly based on the principle of "Decentralisation by Devolution". These has led to the MKUKUTA (National Strategy for Growth and Reduction of Poverty,

2005), which sets operational goals and puts policy in a functional framework that, in the water sector is embodied in the National Water Sector Development Strategy of 2005. The NWSDS sets out how the National Water Policy will be implemented and describes the institutional and legislative changes required. Within the context of the NWSDS, the water sector is considered as covering water resources management, control of pollution, water supply services, sewerage services and provision of on-site sanitation for the disposal of human excreta and waste water.

The sector strategy is incorporated into three different programmes: the National Rural Water Supply and Sanitation Programme (NRWSSP), the Urban Water Supply and Sewerage Programme (UWSSP), and the Water Resources Management Programme (WRMP). These are consolidated into a Water Sector Development Programme (WSDP), and it is done on a consultative basis with sector-related key stakeholders, adopting a sector-wide approach to planning (SWAP) as a mechanism whereby the government and development partners agree the strategy to achieve better performance and more effective use of resources.

In brief, the Government aims to bring together the three sub-sectors -rural water supply, urban water supply and sewerage, and water resources management- under one comprehensive investment and one regulatory regime.

The interrelationship between the NWSDS with other national policies/strategies and the sub-sector programmes is shown in the next figure.

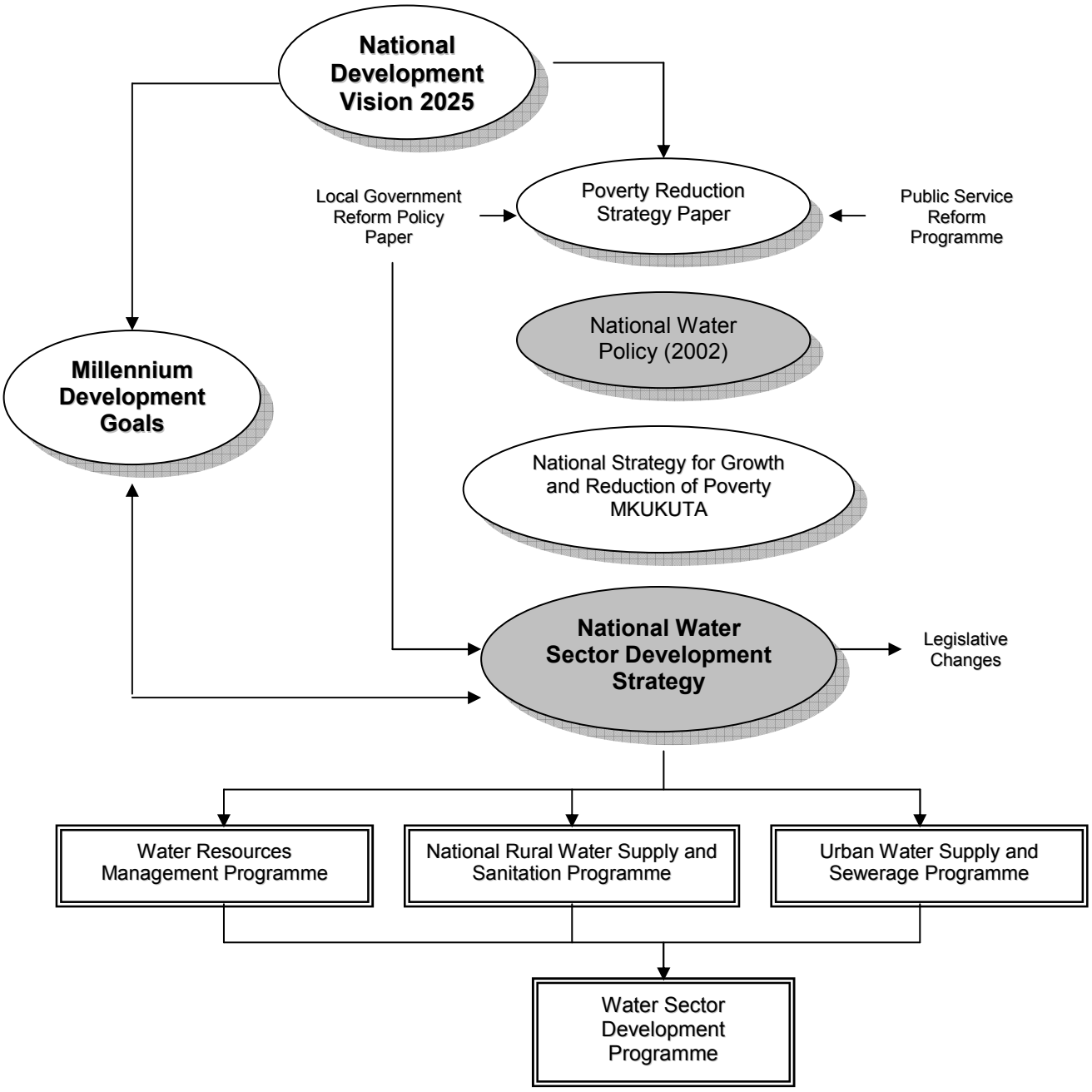

Figure 1.3. Inter-relationship of the NWSDS with other policies and strategies

The key lesson learned from previous experience was that to achieve sustainability, water supply and sanitation facilities should be owned and managed locally by organisations that are both close to and accountable to the consumer. In this respect, NAWAPO states that this can only be achieved if the responsible organisation at the community level is trained and empowered, contributing meaningfully at all stages: planning, design, implementation and long-term maintenance and repair of the facility. In particular, NAWAPO emphasizes:

- a demand-responsive approach, whereby communities choose service levels based on their

perceived needs and ability to pay;

- an initial contribution to capital costs and the full financing of O&M costs by communities as a means to foster ownership of the project; and
- implementation and management of schemes by communities with the assistance of local governments, NGOs and the private sector .

1.4.2. Water Policy, aims and targets

The framework for water sector policy, strategies and financial planning in Tanzania stems from Vision 2025 and the Poverty Reduction Strategy Paper (PRSP), which provides guidance to the revised National Water Policy. In this respect, a number of these existing policy and strategy documents contain targets to be achieved in terms of level and timescale, in order to improve service availability to both urban and rural populations.

The target of the **National Development Vision 2025** for water and sanitation sector is universal access to safe water by 2025 through (i) involvement of the private sector; (ii) empowering local government and communities; and (iii) promotion of broad based grass root participation.

The revised **Poverty Reduction Strategy** targets on water are to raise the proportion of rural population that has access to safe, clean, affordable and reliable water from 53% in the year 2003 to 65% by the year 2009; and raise the proportion of urban population with access to clean and safe water from 73% in 2003 to 90% by the year 2009. Similarly, access to improve sewerage facilities has to be increased from 17% in 2003 to 30% by the year 2009, as well as to raise accessibility to basic sanitation up to 95% of people. In order to achieve these targets, the PRSP suggests that the sector should "*fully implement the National Water Policy*".

Finally, the **National Water Sector Development Strategy** sets out how the NAWAPO will be implemented to achieve these targets. This will, in turn, guide the formulation of the three sub-sectoral programmes: the National Rural Water Supply and Sanitation Programme (NRWSSP), the Urban Water and Sewerage Strategic Programme (UWSSP), and the Water Resources Management Programme (WRMP):

National Rural Water Supply and Sanitation Programme

The NWSDS outlines a number of goals relating to rural water supply, which includes both rural and all small town populations. It recognises the role of water services in reducing poverty, and the need to target low income groups in both rural and peri-urban areas.

In brief, the Strategy proposal to overcome the current situation include: (i) to mobilise additional resources and direct these to priority areas; (ii) to place more emphasis on low-cost alternative technologies; (iii) to promote community ownership and management of rural water schemes; (iv) to encourage NGOs and CBOs in financing, developing and managing water supply in low income areas; and (v) to increase private sector participation in water service delivery. However, the Strategy is weak on how to support Local Government to fulfil its role in water service delivery, and weak on how to support and regulate community water management entities (WaterAid, 2005).

The NRWSSP is targeting to raise coverage of population from 53% (rural population) and 49% (small town) of 2003 to 79% and 82% respectively by 2015. In doing so, it will meet the MDGs for the rural areas. Likewise it will raise coverage levels to 90% by 2025 in accordance with Vision 2025 goals. In all, it will provide services to an additional 34.5 million people by 2025 (Figure 1.4.).

Urban Water Supply and Sewerage Programme

Whilst in rural areas it is the responsibility of Local Government Authorities to ensure effective service delivery, in urban areas the burden of responsibility to provide efficient and cost-effective services is given to the Urban Water Supply and Sewerage Authorities (UWSAs), established as an “autonomous” body.

The most fundamental problem is that they do not yet fully exercise their autonomy. Therefore, the UWSSP focuses on implementing a new institutional framework and build the capacity required for DAWASA and the UWSAs in order to provide the appropriate service coverage. Ultimately, the UWSAs will need to become commercial organisations with increasing responsibility for meeting their own operation and maintenance costs and capital investments. In essence, the strategy is thus based on the commercialisation of the urban water authorities so that they are capable of efficient and cost-effective provision of services.

The specific targets include raising water supply service coverage from 74% (2005) to 90% in 2010, to 95% by 2015 to meet the MDGs and to 100% to meet Vision 2025 goals (Figure 1.4.). The target figures include water supply and sewerage service delivery in Dar es Salaam.

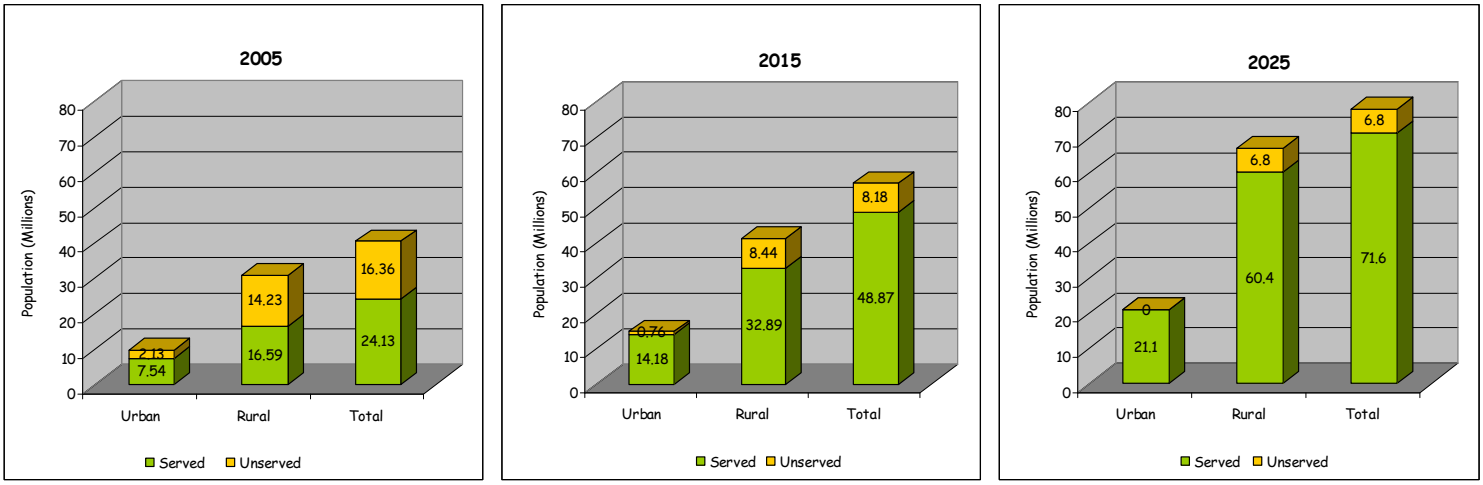

Figure 1.4. Population Projections for Access to Safe Water Supply, in millions (GoT – MoW, 2006b).

Water Resources Management Programme

While measurable progress has been made in achieving specific targets -especially in the delivery of services, such as increasing water supply coverage and hydropower generation capacity- the necessary institutional and legal reforms for water resources management have evolved very slowly. Water resources institutions are poorly resourced and poorly functioning, resulting in huge infrastructure gaps for water supply, for meeting energy demand and for food security needs. Likewise, the concept of integrated water resources management (IWRM) adopted in the past decade is not uniformly understood, accepted, or properly supported.

As a result, the main objectives the WRM programme has to face are to:

- develop a sound water resources management and development framework, based on the establishment and strengthening of the nine Basin Water Offices (BWOs). The main focus will be on enhancing their capacity in water resources monitoring, assessment and enforcement. Other subcomponent activities include: (i) water quality management and pollution control; (ii) protection of important water sources; (iii) water demand management; (iv) strengthening legislation and enforcement; and (v) integrated water resources planning; and to
- promote good governance of water resources through (i) empowering the water users; (ii) encouraging participatory and transparent decision making; (iii) developing ownership to the user level; and (iv) granting secure water rights with responsibilities to the water users, community groups, local government and Basin Boards.

1.4.3. Key players, roles and responsibilities in the rural sector

The National Water Policy aims the adoption of a more effective institutional framework for the provision of water and sanitation services to rural population, and therefore new roles and responsibilities of different players should be clearly defined so as to ensure their effective participation in the provision of water supply and sanitation services. The policy guide in NAWAPO is based on the following key principles:

- The Government's role should be limited to coordination, policy and guideline formulation and regulation.
- Regulatory and executive functions will be decentralised to the lowest appropriate level.
- Responsibility for regulation will be separated from the prioritisation and allocation of capital investment funds.
- Community organisations will own and manage rural water supply schemes.

Nevertheless, the implementation of decentralisation is a slow and complex process, since the current institutional framework for the entire sector is facing three major weaknesses:

- disparate pieces of legislation put in place over the years to regulate the operations of the water and sanitation sector;
- many development partners support different programmes and projects using various approaches; and
- the transformation of the MoW's role and functions has not been finalised.

Therefore, and in order to meet a new institutional framework, NAWAPO embodies effective institutionalised linkages between key sector actors, including central government, local government, External Support Agencies (ESAs), the private sector, NGOs, Community Based Organisations (CBOs), and the communities themselves.

Government and Local Authorities

Central ministries, such as the Ministry of Water (MoW), are no longer responsible for direct implementation of service delivery. Their new role "hands off, eyes on" is one of policy and guideline formulation, coordination, monitoring and regulation. It should include effective monitoring of sector activities, and regulations should be flexible enough to allow local authorities from being able to develop strategies suited to local context

At District Level, it is now clearly the responsibility of Local Government Authorities (LGAs) to ensure effective service delivery through appropriate means (e.g. direct implementation,

contracting the private sector, in partnership with NGOs and/or private sector). Nevertheless, the process is slow and hampered by resistance at central ministry level and by lack of understanding at LGA level.

The President's Office for Regional and Local Government (PORALG) is responsible for the functions of Regional and Local Government Authorities. The Regional Secretariats are their extended arms, and are committed to create an enabling environment for LGAs within their jurisdiction, and to monitor LGA´s progress in improving service delivery (albeit in rural settlements it is complicated by the fact that, unlike health or education services, delivery points are not necessarily on government records).

In brief, the approval of the NAWAPO has necessitated significant changes in the roles of the MoW and the implementing agencies. The challenge is to strengthen the capacity of each institution allowing them to take on their commitment, since currently the majority of LGAs are characterised by low capacity to effectively deliver services, lack of skilled human resources, limited financial resources, and poor accountability.

Community-owned Water Supply Organisations

Community-owned Water Supply Organisations (COWSOs) are to be bodies legally constituted to own, plan, manage, operate and maintain the water supply systems on behalf of the community. This includes (i) designing sub-projects and preparing proposals; (ii) getting approval and subsequent funding (they are expected to contribute to the capital costs -typically about 5%-); (iii) monitoring construction; (iv) setting tariffs; (v) collecting revenue, and (vi) providing reliable services to the consumers; although the COWSOs may contract part or all of their operation and maintenance responsibilities to the private sector. Establishment of the COWSOs will be promoted through the local government framework of district and village councils.

Service Providers

Service Providers will be responsible for providing specific services or materials (spare parts and equipment) needed during the project implementation or its ongoing operation, and they can perform under varying contractual arrangements, such as service, management or lease contracts.

A Service Provider may be a company established by one or more LGAs for this purpose, and it may either be from the private sector, or a non-government or community based organisation.

NGOs / Civil Society

For the first 30 years after independence, the relationship between citizen and state was essentially managed within the one-party framework with minimal space for civil society

organisations. The situation is gradually changing, being the challenge to empower civil society and to involve COWSOs in the decision-making process, since there is growing evidence that civil society has potential to both deliver services and engage in policy development. Nevertheless, the current distribution of local COWSOs is patchy with concentrations in Dar es Salaam, Arusha and refugee affected areas; and most are heavily dependent on external funding from donors or International NGOs. The major role of NGOs should be thus to provide financial and technical assistance and funding.

Private Sector

For much of Tanzania's post-independence period, the private sector was not encouraged. In the mid-1990s (with the adoption of economic liberalization) this has begun to change, and both local and international private sectors have grown rapidly. The distribution of private operators nonetheless is also largely focused around major urban centres, and in many rural districts there is very little formal private sector capacity. One of the objectives of the NAWAPO is to promote participation of the private sector in the delivery of goods (materials, equipment, spare parts, …) and services (providing support to the communities in planning, design and construction of new projects), but the sector remains relatively weak for the role it is being assigned.

External Support Agencies (Donors and Banks)

There are four major External Support Agencies (the EU, World Bank, African Development Bank and German Government) which are responsible for 80% of all external support. Other significant donors include French, Chinese, Japanese and Swiss governments.

The allocation of resources is uneven, and currently over 70% of these external funds are allocated to urban supplies, although only 23% of the population resides in urban areas, cities and towns.

The cooperation between donor agencies is generally weak, and although information exchange has recently begun to improve, the WSDP is expected to push in order to improve coordination in the sector.

1.5. WATER SUPPLY ISSUES

In Tanzania, the NAWAPO and other sector-related policies set the appropriate methodology to construct a water supply facility, and roughly define (as previously described) the roles and commitments of each stakeholder. Therefore, common features appear in different approaches (regardless of the implementing agency); and similarly, the same water supply problems are to be dealt with in each proposed strategy if the intervention aims to be sustained.

1.5.1. The Project Cycle, moving from projects to programmes

The planning and design of rural water supply systems has been traditionally approached as a single project, and therefore all the process (from planning up to execution) has been carried out for a particular scheme or water supply system. It clearly has reported significant advantages for external donors and other implementing agencies, but in terms of sustainability, it has resulted to be inappropriate since it has sidelined beneficiaries' necessities. A water scheme is much more than physical infrastructure, and as a service, it also requires ongoing management (operation and maintenance).

In this respect, it has been recognized the limitations of this approach, and a shift towards a more effective and efficient programmatic approach is currently in place. No longer it is acceptable for implementing agencies to develop water schemes which are simply handed over to the beneficiaries. There is a need to develop long-term strategies based on the importance of ongoing support, whether this is fulfilled by the government, local authorities or service providers. There is a need to understand and put into practice the concept of rural water supply services, rather than implementing water facilities.

In essence, a programme is a series of sequential and integrated activities focussed on the establishment and continued functioning of the services. Nevertheless, each community will progress at its own pace depending on the local conditions, and therefore, the programme has to be suited to local context. In other words, the challenges of a programme approach are social, organisational and administrative. It will generally contain the following main stages:

- Introduction of the Project to mobilize the targeted community, since they will be required to support the entire project.
- Identification of the needs of the community and assess existing levels of service, using a participatory and demand-driven approach.
- Final selection of the community and project approval, carried out with the supervision of local authorities.
- Financing approval. At this stage, the communities are required to identify the appropriate resources to contribute to the capital cost of the project.
- Implementation of the project, in collaboration with communities and where necessary, with service providers. During the implementation, resources should be used efficiently in order to achieve greater impact.
- Supervision and project completion, after verifying the quality of the work done.

- Ongoing management, based on the operation and maintenance of the facility, and carried out by the community or by service providers if it is convenient. Long-term rehabilitation strategies should be considered as well (including financial, technical and institutional requirements).
- Sustainable monitoring systems to prevent, identify, and solve (where necessary) possible failures and other causes of non-functionality. Likewise, a set of functional indicators needs to be agreed by all stakeholders in the sector and properly used to asses the outcomes of the project, and relate them to the expected results.

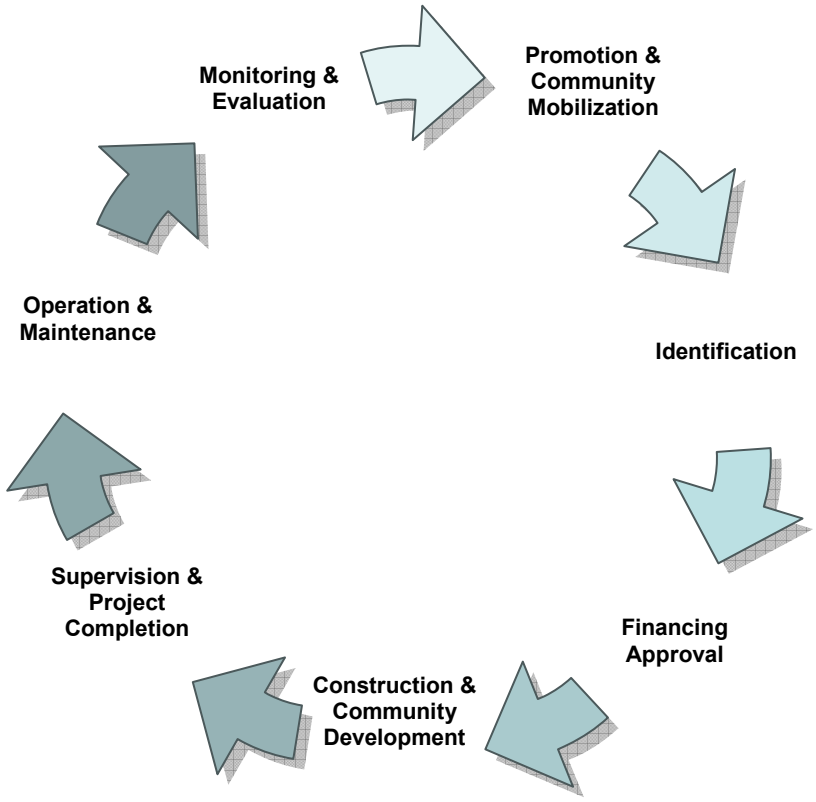

Figure 1.5. The Project Cycle.

1.5.2. Water supply technology options, the appropriate technology

The emphasis of the projects is moving towards social and community aspects. Nevertheless, technology issues still matter, since they are the basic premise for addressing the other components of the project. Therefore, while technology alone is not enough to achieve sustainability; it can have a major impact, especially on ongoing operation and maintenance.

As a pragmatic definition, the appropriate technology is the one which, at lower cost (both capital and O&M costs) best suits the design criteria, depending on the water source, the hydrogeological context, and the water needs required by the community. Albert Einstein is

quoted as saying that everything should be made as simple as possible, but not simpler. This is useful guidance to understand that the use of appropriate technologies which are low cost, durable and feasible under field conditions, easy to understand and easy to maintain/repair, … are likely to be more sustainable than those that require special skills or equipments (Harvey and Reed, 2004).

As shown in Table 1.2, the selection of the appropriate technology for a rural supply depend (among others) on technical aspects, environmental conditions, affordability of the community, and social acceptance.

Table 1.2

Feasibility issues of the technology choice (GoT – MoW, 2007c)

Technical	**Environmental**
▪ Depth of groundwater	▪ Seasonal variations
▪ Water Demand	▪ Source protection
▪ Technical skills required in O&M	▪ Risk of negative impact
▪ Availability of spare parts	▪ Water quality
Institutional	**Economical**
▪ Community management capacity	▪ Household income levels
▪ Private sector capacity	▪ Capital cost and household contribution
Social	**Management Capacity**
▪ User preference	▪ Sustainable management structures
▪ Seasonal migration patterns	
▪ User organisation and social cohesion	
▪ Inclusivity (vulnerable groups)	

In any case, the potential beneficiaries should be aware of the advantages/disadvantages of each option, since not only their involvement is essential, but the final decision (where possible) should rely on them. At least, the community is required to participate in the selection of (i) the type of scheme; (ii) the location of water supply points, wells, boreholes, tapstands, …; (iii) the method of construction; (iv) whether the initial contribution should consist of cash or labour (the NAWAPO stipulates both); (v) the method of payment to accumulate funds for eventual repairs; and (vi) the daily maintenance and cleanliness of the system (WaterAid, 2006).

In Tanzania, the most common technologies used in water supply schemes are:

- Protected spring or shallow well with handpump.
- Piped scheme distributing water from borehole or spring to village or small town.
- Piped scheme distributing water from surface source (lake, dam or river), used mainly for town and urban water supply.

Figure 1.6. Handpump in a shallow well (WA, in Isinghu - Mpwapwa).

Figure 1.7. Diesel Engine to pump water from a deep borehole to a gravity system (ISF, Mang'ola - Karatu).

Figure 1.8. Spring (WA, in Lwihomelo - Mpwapwa).

Figure 1.9. Multiple Waterpoint in a gravity system (WB, in Mazae Nje - Mpwapwa).

Clearly, each choice has its related cost (both capital and O&M), and the use of lower cost options enable more people to be served with the available resources. In addition, since the community is likely to be required to contribute in cash to the project, lower-cost options are more affordable to poorer communities, and intuitively more sustainable.

1.5.3. Community Development and Management

The community management model is one of the most common partnership approach adopted in the water sector, and mainly relies on three different actors (Figure 1.10.). Local government act as an enabler and is responsible for regulation, facilitation and monitoring, providing an environment in which other stakeholders are able to operate with minimal constraints. The community is responsible for the management and financing of ongoing operation and maintenance. The private sector assists the community and satisfies specific services or skills that cannot be provided by the community and that are required for the project implementation (Harvey and Reed, 2004).

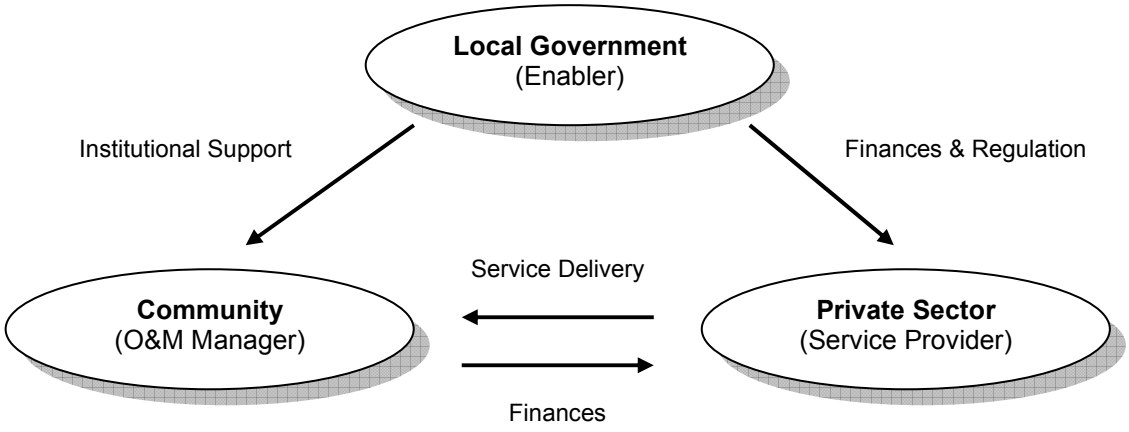

Figure 1.10. Community management model (Harvey and Reed, 2004).

The National Water Policy, as previously stated, launches the principle of 'decentralisation by devolution', which in essence means that day-to-day activities are to be decentralised to the lowest appropriate level. In other words, the community becomes the basic unit for the planning and management of water and sanitation related services, and is thus required to start assuming responsibilities in relation to the ongoing operation of the water facility.

In this respect, the Village Water Committee (VWC) was the product of the 1991 National Water Policy, which shifted responsibility for rural water supplies from the government to the village. Nevertheless, the revised water policy of the 2002 recognizes the poor performance of the VWC, which in general were characterized for not being transparent and representative within the community.

As a result, the NAWAPO in 2002 differentiates between diverse management alternatives, aiming to create an entity able to work independently of village government structures, and achieve more financial accountability than was possible with the previous VWC. These bodies may take various legal forms, such as a Water User Group (WUG), a Water User Association

(WUA), a Company limited by guarantee, a Company limited by share, a Board of Trustees or a Cooperative Society. The choice of a management system is to be decided by the community, being largely dependent on the number of communities served by the scheme and the chosen technical option. It may include a single point source (such as a shallow well, spring box or borehole), a single village piped scheme (pumped or gravity), and a multi-village piped scheme (pumped or gravity).

In essence, each waterpoint is to be managed by a Water User Group (WUG), and a Water User Association (WUA) or another management entity is to be formed at a higher level incorporating representatives of each Water User Groups. It is ascertained that the WUG is the legal owner of the water source, and water consumers are expected to pay a monthly charge, which should cover at least operation and maintenance costs. At the same time, the role of the Water User Association should be to assist and advise the Water User Groups, and funded by their regular contributions, hold a revolving fund for larger maintenance costs (more expensive repairs) which the WUGs could not manage themselves.

1.5.4. Key strategies and approaches

Community Involvement

The importance of community participation in rural water supply has often been highlighted, although participation means different things to different people. It is agreed that community should play a central role in WatSan projects; and in fact, the shift from supply-driven to demand-driven approaches is already in place.

In this respect, a participatory approach should be essential to promote the community participation in the whole project cycle, and to mobilize local people to assume an active role in decision-making, planning and implementation. It serves different purposes: (i) to ensure the acceptance of the project, (ii) to build up capacities of beneficiaries, (iii) to obtain resources in cash or kind from the community; and (iv) and to empower the community (Therkildsen, 1988).

At least, participatory approaches include:

- Establishment of the community needs. It is a demand-responsive approach, and community thus should identify their needs to ascertain what levels of service users are willing and able to pay, and which mechanisms should be in place to ensure that poor people have affordable access to services.
- Selection of the appropriate technologies to be implemented, allocation of the waterpoints within the village, and construction method of the scheme.
- Establishment of the initial contribution (with cash, local materials and unskilled workers).

- Selection of the appropriate management model for ongoing operation and maintenance (private sector involvement where necessary).
- Setting and collection of water charges (type, amount and periodicity).

Gender Issues

Women and men use water and contribute to water management in different ways. For example, it is mainly women and girls who use water for domestic purposes, while men and boys may compete for water from the same sources for farming and livestock purposes. Similarly, for millions of women around the world, fetching and carrying water is an important part of their daily routine. What is meant by a gender approach is that the different responsibilities, wants and needs of both women and men are taken into account in the design and management of projects.

It is generally believed that sustained services are more likely to be achieved when they respond to the demand of all potential users –the poor, better off, women and men- since they are expected to have different wants and needs (Gross et al, 2000).

There is evidence, thus, that an inclusive approach should emphasize equal participation by men and women in all key community decisions during project's implementation, involving women in all stages of the project as well. The goal is to achieve gender equality, meaning that both women and men benefit equally from the project, and that inequality is not perpetuated.

Capacity Building and training

If every partner is expected to fulfil its commitment, it is essential to ensure that it is capable to do it effectively and efficiently; since without adequate and appropriate capacity at all different levels (national, district and local), services are rarely to be sustained.

Therefore, capacity building needs to include a collection of efforts aimed to (i) improve human skills; (ii) promote institutional reforms; (iii) provide physical and financial resources; and to (iv) develop an appropriate operating environment.

The main objectives should be (WaterAid, 2006):

- To strengthen the capacity of all relevant stakeholders in planning, implementing and managing the project at various levels.
- To support community management of the services delivered.
- To create an enabling environment for the private sector and NGOs to provide water and sanitation related services.

Sanitation and Hygiene Promotion

Sanitation improvement interventions and hygiene promotion are essential to prevent water-related diseases, as it has been previously mentioned; and they are currently integrated in all water programmes. In essence, the focus is on promoting (i) safe disposal of human and animal excreta; (ii) regular body washing with adequate water; (iii) safe hygiene behaviour; (iv) safe water collection, storage and handling; and (v) safe food handling and eating.

In brief, the main strategies used in WatSan projects in Tanzania are:

- PHAST (Participatory Hygiene and Sanitation Transformation) methodology, which was developed by UNDP, and is currently promoted by the Ministry of Health and Social Welfare (MoHSW). It is an approach to foster healthy and hygienic practices among the population, and is based on a participatory approach to enable community groups to critically analyse their current water uses, hygienic practices and sanitation conditions, as an efficient way to promote behavioural changes.
- Child-to-Child approach, for hygiene promotion in schools within the project area of intervention. Since health and hygiene are more easily adopted by young children's than adult, and has a long term impact to behavioural changes in the future society; children are target of the hygienic practices campaign, especially for safe disposal of their stools.
- Social marketing techniques, to improve the effectiveness of the message transmission (demonstrative latrines in important places, school activities, house by house campaign…).

2. SUSTAINABILITY OF WATER SUPPLY AND SANITATION INTERVENTIONS

2.1. THE CHALLENGE OF SUSTAINABILITY

Does it work?

Is it sustained?

Does it benefit everyone?

In essence, these are the key questions by which the effectiveness of a water scheme or sanitation infrastructure is now being judged. Nevertheless, for it to be meaningful, sustainability first needs to be operationally defined.

As a pragmatic approach, the Cambridge Dictionary (2005) literally defines sustainable as "able to continue over a period of time", or "causing little or no damage to the environment and therefore able to continue for a long time". Similarly, Abrams (1998) understands sustainability as "whether or not something continues to work over time". Finally, and in the context of water supply, WELL (1998) developed the following definition:

> *A water service is sustainable if the water sources are not over-exploited but naturally replenished, facilities are maintained in a condition which ensures a reliable and adequate water supply, the benefits of the supply continue to be realized by all users indefinitely, and the service delivery process demonstrates a cost-effective use of resources that can be replicated.*

There have been several other approaches, definitions and interpretations, but if we look at the lowest common denominator, the issues emerging again and again from these definitions are:

- The water service has to be successfully installed, operated, maintained and repaired, ensuring a continued flow of benefits and a reliable and adequate water supply in the long term.
- It has to be cost-effective and financed (at least operation and maintenance costs) by the users.
- The water consumed is not over-exploited but naturally replenished.
- The water service has to reach everybody, including the most vulnerable and the poor

Therefore, while defining sustainability is not difficult, determining what has to be done to achieve it has created considerable debate. The key appears to be to identify what enables a water scheme to remain operational over a long period of time, although in practice, the ability of a community to keep a waterpoint functioning depends on a complex mix of managerial, environmental, social, financial, and technical issues and the capabilities of the institutions and infrastructure designed to support the community (Sugden, 2003).

Sustainability is thus a complex, dynamic concept which is made up of many interrelated components (Figure 2.1.), in a way in which it depends on all of them, and that a weakness in any of them can lead to the failure of the scheme.

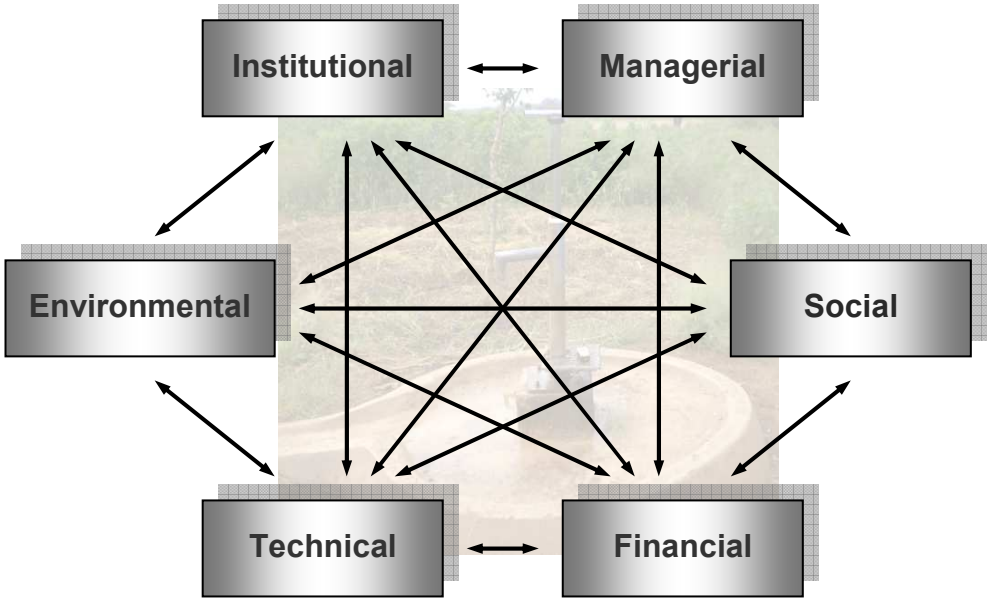

Figure 2.1. Factors affecting sustainability.

2.2. MEASURING SUSTAINABILITY

In order to understand to what extent the factors previously mentioned can affect the functionality of a water scheme, WELL (1998) also defines four criteria which allow sustainability to be measured.

Effectiveness is the degree to which rural water services and interventions meet their objectives. This comprises the functionality of the water supply facility (issues around quantity and quality); the capability to ensure that all sections of the community – including the poorest- have access to affordable and reliable water; and also the associated benefits such as improved health, time saved and income generated.

Efficiency represents the output produced per unit of resources; including financial, human and environmental resources invested for service delivery, operation and maintenance. Thus, efficiency is related to the number of people served for a fixed amount of money invested: a water service may operate successfully but overexploit (inefficiently) natural resources, human effort or funds, leading to unsustainability.

Equity is the degree to which water services reach all members of communities. Current provision of WSS often fails to reach the poor and other disadvantaged groups (such as

women, children, elderly people, the sick, and disabled people), and thus issues related to vulnerability, poverty and gender are of key importance to ensure that equity is achieved. Water services must be affordable and accessible to all if they are to be equitable.

Replicability is essential to ensure that services and interventions can be expanded to increase the coverage of people who have access to safe drinking water. Replicability should not imply rigidity, and flexible approaches that can be replicated are essential for sustainability. There are two aspects to the replicability of the project which need to be considered. Firstly, in terms of the replicability of the project within the current community: to what extent are the communities able to extend their waterpoints themselves, either through piped systems or through the construction of further independent water systems. The other form of replication would be the replication of the key aspects of the project in other districts or regions.

At the same time, nonetheless it is also known that the impact of water supply and sanitation programmes on public health is both difficult to predict and measure, even if they are sustained. There has been a growing recognition that water supply and sanitation improvements alone do not bring optimum health and development impact, since 'correct' usage of water supply and sanitation infrastructure and good hygienic practices are a necessary but not sufficient condition for disease reduction. It has been demonstrated (Carter et al, 1999) that other aspects of environment and infrastructure (such as solid waste disposal, wastewater disposal …) are needed to yield the full benefits of water and sanitation interventions.

2.3. SUSTAINABILITY OF WATER SUPPLY AND SANITATION SERVICES IN TANZANIA

Over the last four decades, and despite the fairly substantial donor support of funds and technical assistance to the planning and implementation of rural water supplies, it has become widely accepted that the factors that affect the sustainability of a water scheme have not been considered – or not at all. In developing countries, a significant number of projects fail to deliver benefits to society over the long term, and although different approaches have been implemented to improve this situation, the reality of sustainability remains elusive. In particular in Tanzania, and according to the National Water Policy (2002), at least 30% of all water systems do not function.

The non-engineering aspects have been ignored during implementation (training, participation, institutional development), and the emphasis has typically been on purely technical aspects,

prioritizing on the fast production of new water schemes (Therkildsen, 1988). As a result, the service often ceases to function shortly after being handed over to their users.

The widespread failures or causes of non-sustainability in water supplies include (i) interventions which are not desired by the community; (ii) the capital and/or operational costs that the community is supposed to raise are unaffordable or impracticable; (iii) lack of ownership of the scheme resulting in neglect of maintenance; (iv) inadequate education and thus programmes failing to change attitudes and behaviours within the community (e.g. with regard to hygienic practices) and leading to lack of responsibility of the trained members to maintain the service operational; and (v) expected benefits (e.g. health improvements) which never materialise (Carter et al, 1999). Other factors such as (i) an inappropriate institutional framework; (ii) a lack of definite government policy; and (iii) local institutions bypassed assuming that the shortage of recipient capacity to plan and implement can be efficiently substituted by technical assistance staff in the short term, also have contributed to undermine sustainability (Therkildsen, 1988), since it has diverted attention and resources from the need to build up domestic institutional capacity towards the production of new schemes.

Similarly, and even if the scheme appears to be working, Carter et al (1999) identifies other aspects which can diminish the sustainability and thus also need to be considered, if all the potential benefits of water and sanitation infrastructure are to be achieved:

- people use less than the design per capita water supply volume;
- while distance to source has been reduced, women still have to carry heavy loads of water in clay jars or plastic jerry cans, leading to discomfort or injury;
- while water quality may be good at source, faecal contamination may be evident at the point of consumption;
- periodic breakdown of new sources necessitates continued use of 'traditional' contaminated sources;
- adoption of good hygienic practices may be limited.

This background and the poor performance of the schemes have been thus the main driving force behind the shift to a new National Water Policy (2002), since an appropriate policy context within projects are developed and implemented is essential to providing a supportive environment that ensures long-term sustainability. Therefore, whilst the existence of a well-formulated policy can not guarantee that projects are more sustainable, it can at least provide the basis for a common understanding and focus amongst all the stakeholders (Government, NGOs, Communities, and ESAs). In its absence, different actors often employ different

implementation approaches and different technologies, which can lead to a fragmented and unsustainable water supply sector (Parry-Jones et al, 2001).

The NAWAPO identifies seven pre-requisites for a sustainable water supply:

1. **Management at the lowest appropriate level**

   It has become widely accepted that communities in rural areas of developing countries should assume most management responsibilities for their water projects. In fact, the International Conference on Water and the Environment in Dublin (1992) advocated the concept of water as an economic as well as a social good that should be managed at the lowest possible level, as a clear response to the poor performance of centrally managed rural water supply programs implemented during the International Drinking Water Supply and Sanitation Decade.

   The demand-responsive approach to providing services is a direct extension of this new policy, based on the devolution of responsibility for water schemes from governments to villagers, and on a participatory approach involving users, planners and policy makers at all levels. It advocates that projects should adopt clear and transparent rules that allow users to select the level of service, technology, and location of facilities that best fit their needs, with a clear understanding of the costs and responsibilities that these options bear.

   Katz and Sara (1998) found that sustainability is higher when a demand-responsive approach is employed, and also when the demand is expressed directly by household members, and not through traditional leaders or community representatives (such as water committees or local government). At the same time, Carter et al (1999) state that without the motivation and manifest desire of the community to utilise the new source, sustainability is doomed. Finally, communities that receive household training are more satisfied with the system and more willing to pay the cost of maintenance, while training for the members of the water committee will also lead to better operation and maintenance and financial management (Katz and Sara, 1998).

   Therefore, to achieve sustainability, water supply and sanitation development requires effective complementary inputs such as community participation, motivation and involvement of all stakeholders, community capacity building and community training.

2. **Communities owning and managing their water schemes**

   It is common practice for village water schemes to be managed by a village committee of some sort; the creation of which is intended to enable communities to have a sense of ownership over the scheme.

Nevertheless, community management means different things to different people, since it can take different forms. At a minimum, it involves the ongoing operation and maintenance of the water supply, although it can also include (i) the choice of service level, (ii) the selection of technology and its sitting, (iii) the provision of labour and local materials, (iv) a cash contribution to the project costs, (v) the selection of the management type and even the water tariff (Mays, 2007). It is thus the process through which demand-responsiveness is exercised, and community empowerment achieved.

A history of top-down service delivery by governments frequently leaves a legacy of dependency in the villages on external assistance, since the operation and maintenance of the schemes is not perceived to be their responsibility. Consequently, and according to Katz and Sara (1998), the existence of a formal community organization that operates the system affects the overall sustainability of a water system, showing that sustainability is significantly lower in communities that lacked such organizations.

It is a mistake, however, to believe that despite the importance of the community's role in maintenance, it can become self-sufficient and that an additional structured and trained organisation is not required (Carter et al, 1999). A district or regional organisation (government agency or NGO) will be needed to ensure the long-term functionality of the schemes and to support the programmes which they promote, either as a source of trained technicians or to guarantee an efficient and an appropriate spare parts supply chain.

3. Availability of spare parts and know how

The problem of supplying spare parts in rural areas for water schemes and the availability of technicians has often been highlighted.

The simplest solution is to use only (if possible) simple technologies which do not require specialist spare parts and components or trained technicians. Nevertheless, and unfortunately, at least more than 40% of all rural water supply schemes have to rely on hand pump technology in Tanzania (GoT WSDP, 2007), and a sustainable supply chain is therefore required to be implemented.

In essence, a sustainable spare parts supply has to fulfil the following requirements: (i) available –required components are in stock or rapidly delivered-; (ii) accessible –awareness of where to find spares outlets and their proximity to the community-; (iii) affordable –priced within the means of the community-; and (iv) appropriate –of correct specification and good quality-. In this respect, Harvey and Reed (2004) suggest that in order to ensure that all these criteria are met, at least one of the following three requests has to be satisfied:

- Spares supply strongly linked to the supply of new equipment and related services.

- Community management of maintenance replaced with more centralized public-service systems.
- Use of technologies whit standard spares that are already available.

4. Full cost recovery for operation and maintenance (O&M) of the scheme, as well as replacements

If services are to remain operational, sustainable financing mechanisms need to consider at least O&M and longer term rehabilitation needs, since full cost recovery systems (also including planning, design, construction and equipment) are significantly beyond the means of most rural communities.

The emphasis must thus be shifted from paying for maintenance of a facility to paying for the provision of safe, adequate and accessible water (Harvey and Reed, 2004).

With regard to community contributions, nonetheless, there is considerable debate. Thus, some research (Parry-Jones, 2001; WELL, 1998; Zvikomborero and Hertle, 2006) concludes that the only true indicator of future performance in revenue collection is the completion of the initial contribution stipulated by the implementer (the NAWAPO specify a contribution, in cash, of 5% of the total capital cost). At the same time, there is also a school of thought (Harvey and Reed, 2004) stating that user financing of implementation costs for improved rural water systems is an unrealistic goal. In any case, it is agreed that ownership and maintenance of the facility is enhanced by ensuring that the users contribute towards the cost of running their own water supply. In particular, the NAWAPO (2002) aims to have full cost recovery on operation and maintenance costs, and states that the communities should manage their own facilities by choosing technologies and setting tariff that is affordable and commensurate with their economic status. Likewise, Katz and Sara (1998) states that in a demand-responsive approach, the choices that people make should be linked transparently to prices, so that people can make informed choices and perceive their contributions as an expression of demand rather than a tax.

Nevertheless, although cost recovery for ongoing service delivery is in most cases an achievable target, paying for water can be a big burden for the poorer sections of the community, which sometimes will be forced (in case of unaffordable expenses) to collect water from unprotected sources -when available- or to make do with minimum amounts at other times. Since equity is an essential criteria with regard to sustainability, a mechanism to provide the service to the poorest and most vulnerable is required (while ensuring adequate cost recovery), and thus, any kind of offering direct subsidies (by the Government or by the communities) to the poor should be an option to be considered. In this respect, in Tanzania,

communities are required to arrange for paying for the service to the poor, since they well know about all people unable to afford paying for it (GoT WSDP, 2007).

5. The protection of water sources

The inexorable increase in global population and use of water for economic purposes puts ever greater pressure on the world's water resources, and the protection of water resources from depletion, pollution and degradation has thus become a priority in Tanzania, although safeguarding community water supplies (quantity and quality) still remains challenging.

The concept of Integrated Water Resources Management (IRWM) emerged in 1992 in Dublin, and based on an effective integrated approach to the management of national and regional water resources, in essence it means that WSS programmes have to be considered alongside plans for water use in irrigated agriculture, livestock keeping, mineral processing and industry, and for the protection of water ecosystems.

The emphasis is given thus to the protection and conservation of water resources, recognising the scarcity of freshwater and that neglect of pollution control is threatening the sustainability of future resources. In particular, it is based on (i) integrating demand forecasts into national plans for allocating water resources nationally; on (ii) ensuring that proposals for sanitation and sewerage improvements are consistent with national strategies for water conservation and pollution prevention; on (iii) institutional linkages to ensure compliance with river quality objectives and other environmental standards; and on (iv) enhancing the role of the community to foster local WSS improvements.

6. Balancing between technology, service level and the capacity of the beneficiaries

The NAWAPO (2002) establishes that in rural areas, the targets for the minimum service level requires a water point serving no more than 250 people with water of acceptable quality, at a distance of not more than 400 meters from their homestead, and at the rate of 25 litres per person per day. In urban areas, the aim is to provide a service to all customers for at least 99% of the time of supply (24 hours of service per day) and limit interruptions to no more than 12 hours. In both cases (rural and urban), the water supplied should comply with Tanzanian standards for drinking water (see Annex D).

Nevertheless, while in some cases achieving these latter targets requires a huge investment of resources (e.g. in sparsely populated rural areas a high density of new sources would be required); in others, a water source may be rejected because of unpleasant but not harmful, aesthetic water quality parameters such as colour, taste and odour. Both can have serious consequences and reduce the sustainability of the project. The former because either consumption will not reach the target level, or significant amounts of time and energy will

still be spent on water collection (source proximity to home closer than 400 metres is a remote scenario for many rural households in Tanzania). The latter, since the choice of the use of water from alternative sources (mainly surface sources such as streams, rivers and dams) can be linked to the perceived quality of the water, creating potentials for waterborne diseases (Carter et al, 1996).

Therefore, despite increased emphasis on the social and community aspects of water supply, the selection of the technology in order to provide the required level of service still has a major impact regarding to sustainability, especially on ongoing operation and maintenance needs. In this respect, and since it has been previously mentioned, involving communities in the choice of service level and the selection of a water supply system that is both technologically appropriate to their physical and social environment, and financially affordable both in the investment phase and during the operation and maintenance phase, will be essential to promote the principle of community ownership and management.

7. The recognitions of women as key players and the inclusion of the poor

It is generally believed that services are better sustained when projects offer informed choices to all potential users (both women and men, poor and better off), thus empowering them to influence the process of service establishment (Gross et al, 2000). In essence, the more that gender and poverty sensitive is the demand-responsive approach from the beginning in interactions with communities, the more the community has the opportunity to influence the service delivery process, and the more it helps to build community ownership and capacity to manage the services effectively.

The consideration of gender and poverty should be a prerequisite, since equity is one of the key success criteria linked to project sustainability. In fact, although water supply services can perform well technically, if they do not consider gender and the poor, an important segment of the population is still being unserved, and thus sustainability is not achieved (Harvey and Reed, 2004).

The NAWAPO (2002) thus sets the conditions for the achievement of sustainability in practice, and they are well summarized by Carter et al (1996), when state that a sustainable water scheme at least should include:

- caretakers fulfilling their assigned job descriptions;
- committees meeting regularly, keeping minutes, and functioning in a manner acceptable to the community;

- revenue collection taking place in the manner agreed at the construction phase, or in some other effective way;
- the backstopping agency (Government or NGO) in regular and effective contact with the community;
- usage of water supply continued and at the targeted levels; and
- physical infrastructure fully functional.

To sum up, Abrams (1998) points out that "if the water flows, then all of the many elements which are required for sustainability must have been in place. There must have been money for recurring expenses and for the occasional repair, there must have been acceptance from the consumers of the service, the source supplying the service must have been adequate, the design must have been properly done, and there must have been sound construction."

PART II: WATER SUPPLY STRATEGIES IN TANZANIA

WATER SUPPLY STRATEGIES IN TANZANIA

This chapter aims to describe and understand the strategy by which different organizations implement projects in the water sector, and their approach to both integrate all the issues described in previous chapters and overcome the major constraints regarding to long-term sustainability of their interventions. It should not be a comparison, since the three agencies are extremely different, but a thorough analysis to understand which is their (i) rationale to work in Tanzania, (ii) volume of intervention, (iii) strategic aims, (iv) implementing partners, (v) sustainability approach; and above all, identify their specific strengths and weaknesses.

WaterAid (WA) is an International Non Profit Organisation who started working in Tanzania in 1984, and thus it is certainly one of the most experienced agencies regarding to water supply and sanitation in the country. Similarly, the World Bank (WB), as an inter-governmental organisation has more than thirty years working in WatSan projects, although it is not an implementing agency and it usually executes through the Government. Finally, Ingeniería Sin Fronteras (ISF) is another INGO which started its first project ten years ago, albeit a lower volume of intervention in comparison with the two other institutions. Therefore, three different agencies, with three different approaches, and sharing the same goal: to provide safe water and improved sanitation to rural population on a sustained basis.

Table 3.1 shows general data about the overall intervention and the distribution points (DPs) implemented by each organization in the country (more detailed data in Annexes A -WA-; B -WB-; and C -ISF-).

Table 3.1.

General data of the overall intervention of WA[2], WB[3], and ISF[3]

	Period of Intervention	Num of Villages	Population Census 2002 [4]	Total DPs Implement.	Total DPs to be Developed	Population to be Served [4]	Investment x 1,000
WaterAid	1984 - 2004	174	540.8	976	42	254.5	
The World Bank	2002 - 2007	135	418.5	593	1,316	468.7	US$ 14,360 [5]
Ingeniería Sin Fronteras	1996 - 2007	26 + 10-15	192.9	194	122	160.4	7,805.5 €

[2] Data available until 2004
[3] Data from some projects is not available
[4] Population / Beneficiaries x 1,000
[5] Investment including the hard component (construction of schemes), and excluding the soft component (capacity building)

At the same time, and in order to further understand how the strategy was implemented in the field, some projects of each organisation were visited:

- WaterAid: Mpwapwa (Dodoma)
- The World Bank: Mpwapwa (Dodoma)
- Ingeniería Sin Fronteras: Mang'ola (Arusha) and Same (Kilimanjaro).

The following map shows the districts of intervention of the three organisations, and the field visits are depicted graphically as well.

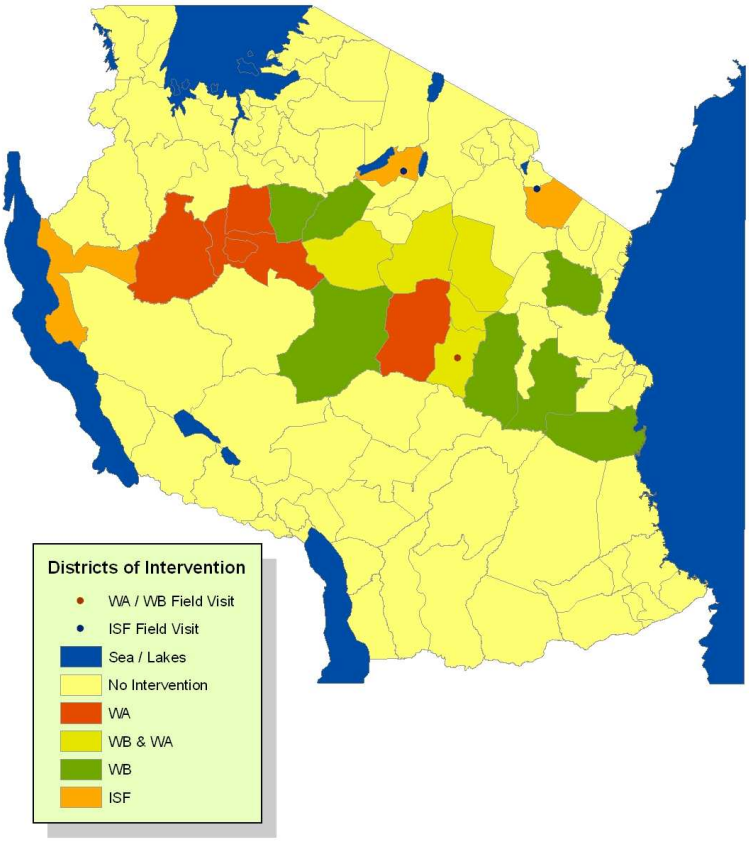

Figure 3.1. Districts of intervention of WA, WB, and ISF.

3. STRATEGY OF WATERAID

3.1. IMPLEMENTING WATSAN PROJECTS THROUGH DISTRICT PARTNERS. THE EXPERIENCE OF WATERAID IN TANZANIA

WaterAid (WA) started working in Dodoma in 1984 under the auspices of the Anglican Church, and it thus now has over 20 years of experience in delivering sustainable water, sanitation and hygiene promotion programmes to some of Tanzania's poorest communities. During this period WA has expanded its activities to Tabora Region in 1995, to Kiteto District in 1996, to Dar es Salaam in 1998, and to Singida Urban in 2001; growing to be one of WA's biggest country programmes, with a total organisation of 60 staff and an annual budget of over US$2 million.

The significant features of WA Programme in Tanzania are that:

- in its service delivery and hygiene promotion programmes, WA's main partnership is with the government (although in some cases other civil society organizations or private sector are also additional partners), by an integrated team which comprises personnel from the relevant departments of the local authority (at least Water, Community Development, Health, and Education);
- it is focussed on implementing the NAWAPO, and in essence on two key operational aims: to increase extent of work in water provision, sanitation and hygiene promotion; and to develop capacity in research and influencing national policies and practices;
- it enhances a model of an integrated demand-responsive and participatory approach, where both water supply and sanitation issues are considered, and in which development is driven by the real needs of the communities;
- it addresses issues of water depletion and contamination on a sustained basis, through appropriate water resource management measures; and
- it is based on an annual budget, establishing with their partners the priorities of intervention annually.

WA thus relies on a partnership with the government in a participatory approach to water projects to bring more rapid and sustainable results, since it is believed that Government can achieve a level of coverage and replicability which is rarely possible through any other agency.

3.1.1. Description of the Programme

WA is implementing WSS projects by 4 rural service delivery programmes which span across 4 contiguous regions in the middle of the country, plus one urban programme in Dar es Salaam.

- Dodoma Programme is currently consolidating work on water supply interventions in the 5 districts of Dodoma Region, and though hygiene promotion has also been carried out on a large scale, it has not been an effective means of changing behaviour.
- According to government statistics, Tabora is one of the least-served regions. Tabora Programme is focusing on three districts, Nzega, Uyui and Urambo (it also implemented projects in Tabora Rural in the past), assisting in the development and support of Water and Sanitation components of district plans. Nevertheless, progress has been slow largely due to lack of both capacity in the District Councils and viable local partners.
- Singida Project has been a largely successful innovative service delivery partnership between the LGA, NGOs, CBOs, and private sector; delivering services to people in the peri-urban and rural areas of Singida Municipality. The project has successfully demonstrated that the partnership approach can be effective in scaling up service delivery, although more focus on issues of sustainability is required.
- Kiteto Programme (in Manyara Region), in partnership with KINNAPA (a local NGO) and Kiteto District Council, has completed projects in six villages in Kiteto District, providing services to both pastoralist and settled communities. It has achieved limited success in part due to problems in the tripartite partnership, and partly due to the lack of understanding of the water / livelihoods issues and sanitation needs of pastoralist communities.
- Dar es Salaam Urban Programme (in the Temeke Municipality) focuses its water initiatives on ensuring that poorer unplanned communities get access to adequate clean water supplies. In the critical area of urban sanitation, WA aims to initiate a 'city-wide sanitation approach' involving all key stakeholders, while it is also supporting discrete public sanitation projects – such as community managed public latrines, school latrines, and community cleaning campaigns, alongside hygiene promotion through PHAST and 'Child to Child'.

Equally important, WA has established the Policy Programme (in Dar, 2002) to bring their practical experience to the policy debate in order to influence reform processes; which has enabled WA to position itself in a range of policy debates on water, sanitation and poverty reduction. The programme's main partner has been the MoW, and albeit it has been greatly valued, there are still relevant issues unresolved (WaterAid – Tanzania, 2005):

- To integrate the policy work and service delivery programmes more closely, taking policy work to district level, in order to provide a bridge between national policy changes and community level outcomes.

- To ensure effective outcomes from the revised MKUKUTA. It is required to monitor budget allocations by government to water and sanitation; how the money is spent by both ministries and local government; and whether poor people are benefiting from improved services.
- To better understand the factors responsible for inhibiting poor and vulnerable individuals' use of common water points; and in particular, to identify the implications of cost recovery and service delivery standards in relation to the most vulnerable groups.

Table 3.2 shows the main outputs of the projects funded by WA[6] (more detailed data in Annex A), and the villages of intervention are depicted graphically in Figure 3.2., indicating which Distribution Points (DPs, waterpoints) are already implemented or are under construction[7].

Table 3.2

Data of projects implemented by WaterAid

Region	District	Num of Villages	Population Census 2002 [8]	Total DPs Implement.	Total DPs to be Developed	Population to be Served [8] [9]	Investment
Manyara	Kiteto	6	12.87	32	2	8.5	
	Total	**6**	**12.87**	**32**	**2**	**8.5**	
Singida	Singida Town	19	56.95	143	1	36	
	Total	**19**	**56.95**	**143**	**1**	**36**	
Tabora	Nzega	8	21.95	29	19	12	
	Tabora Rural	3	7.83	17		4.25	
	Urambo	5	25.92	33	16	12.25	
	Uyui	15	31.22	63		15.75	
	Total	**31**	**86.93**	**142**	**35**	**44.25**	
Dodoma	Dodoma Rural	37	112.33	128		32	
	Dodoma Urban	19	75.74	166		41.5	
	Kondoa	22	58.77	184		46	
	Kongwa	19	64.85	95		23.75	
	Mpwapwa	21	72.34	86	4	22.5	
	Total	**118**	**384.02**	**659**	**4**	**165.75**	
Total WaterAid		**174**	**540.77**	**976**	**42**	**254.5**	

[6] Data available until 2004
[7] Data of some villages is not available, and thus some villages are not shown in the map
[8] Population / Beneficiaries x 1,000
[9] A ratio of 250 people served per Water Point is assumed (in concordance of the NAWAPO's target)

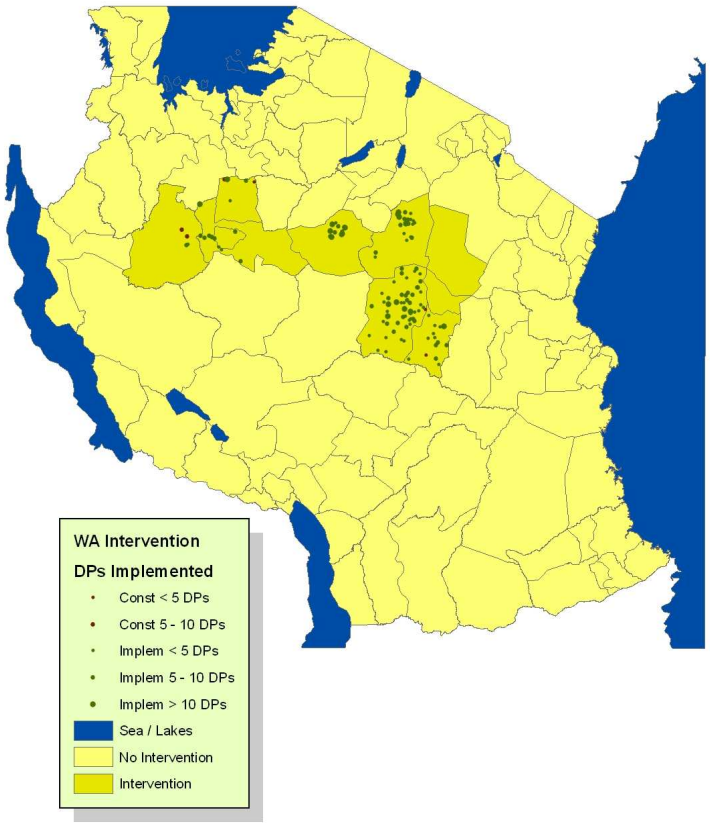

Figure 3.2. Intervention of WaterAid in Tanzania.

3.2. STRATEGIC CONTEXT AND RATIONALE [10]

3.2.1. Rationale for WaterAid Involvement

Since 2001 there have been key changes in the policy context in Tanzania. The National Water Policy (NAWAPO) was revised in 2002, the National Water Sector Development Strategy (NWSDS) was formulated in 2004, and the Government of Tanzania developed a new National Strategy for Growth and Reduction of Poverty (MKUKUTA) embarking on a process of 'decentralisation by devolution', with control over investment and rural water service delivery moving to local government. Equally important, both MKUKUTA and the Millennium Development Goals (MDGs) have focussed their attention on poverty issues, and on the role of water and sanitation in addressing poverty, establishing the national sector-related targets. Finally, WaterAid also prepared a new International Organisational Strategy for the period 2005-2010, which aims to make a significant contribution to the achievement of the MDGs in the WatSan sector.

[10] From ***WaterAid Tanzania: Country Strategy 2005 - 2010***, WaterAid Tanzania (2005)

In response to all these changes, WA in Tanzania focuses its effort (technical, financial, and policy influencing) at strengthening local government-led partnerships at district level to "make decentralised government work for water and hygiene service delivery". At the same time, WA puts increased emphasis on policy advocacy at national level, and is thus to maintain strong links with the central ministry at national level, in order to effectively share direct experience of policy implementation at district level.

Likewise, WA recognises an imperative need to address issues of sustainability of water supplies, and in essence to ensure equitable and inclusive services (especially to the poorest and most vulnerable groups within society), and to strengthen partners' capacity and commitment to take lead roles in implementation, as key aspects if projects are to be sustained and replicated.

In the more complex urban environment, and in recognition of the increasing proportion of people in urban areas, WA's first priority is to develop a coherent urban strategy to be implemented over the next years.

3.2.2. Lessons learned from the past

In the course of having implemented different WatSan programmes and its large experience in the country, a range of lessons have been learned, the following are of particular relevance:

- WA has focused on activities and outputs rather than longer term outcomes and objectives, lacking of more strategic plans at programme level. It is therefore a need to plan on a sustained basis and to develop effective exit strategies once the project is finished.
- To monitor and to evaluate are both needed to measure the impact or success of any intervention. Thus a new monitoring framework is required, with increased emphasis on routine monitoring of inputs to outputs (efficiency) and outcomes at project/programme level, including inclusivity and sustainability (effectiveness). Impact assessment (on health, poverty, livelihoods etc) should be periodically informed as well for wider advocacy work.
- WA has tended to lead implementation, and has focused on faster production of new schemes, rather than developing partner capacity. There is a need to learn to work more effectively through partners, and to enable them to take the operational lead.
- WA urban work (mainly in Dar es Salaam) has been largely opportunistic, and lacks a coherent direction. The urban context is complex and thus a clear strategic urban approach is required if it is to achieve a significant impact.
- More people lack access to adequate sanitation than lack access to water, and at the same

time, many of WA's sanitation and hygiene interventions have poor performance. In addition, integrated delivery of water and sanitation is not always appropriate as timeframes, skills, partners and approaches are different. There is need for innovation in sanitation and hygiene promotion approaches.

- WA has established itself as a key player in the water sector policy debate, developing a strong policy advocacy and research capacity. Nevertheless, it is believed that closer integration of policy work and service delivery programmes has potential to strengthen both components.

3.3. OBJECTIVES AND STRATEGIC AIMS [11]

The overall goal of WaterAid in Tanzania is to work towards a vision of a world where everyone has access to safe water and sanitation, and in particular, its mandate is to provide funds, expertise and equipments for the implementation of water and sanitation projects. More specific, it seeks to contribute to achieving water and sanitation targets set in both Tanzania's MKUKUTA and MDGs, by:

- enhancing local capacity to deliver effective, sustainable, and equitable water, sanitation and hygiene services within the framework of decentralised local government;
- carrying out quality research, monitoring and analysis of their projects, other relevant interventions and the policy environment, to enable WA and partners to effectively advocate for a macro policy environment that promotes and enables LGAs to plan and deliver WatSan services for the poor; and
- initiating a transition process so that WatSan service delivery programmes supported by WA are effectively delivered and led by partners.

3.3.1. Strategic Aims

Accordingly, 8 significant strategic elements have been identified, aiming to efficiently improve (best use of limited resources) WatSan services to the poor in Tanzania.

To develop and strengthen decentralised Local Government Authority and to lead partnerships to deliver water and hygiene services in rural and peri-rural areas

WA believes that Tanzania's "decentralisation by devolution" is the biggest single opportunity for improving service delivery in the water sector in rural and peri-urban areas, since it offers an

[11] From ***WaterAid Tanzania: Country Strategy 2005 - 2010***, WaterAid Tanzania (2005)

opportunity to localise detailed coverage targets and to strengthen Local Government to perform its service delivery role. Its partnership, where possible with communities, NGOs, the private sector and / or other non-governmental entities, is crucial if the service is to be sustained; and WA plays a key role by making it (the partnership between LGA and other stakeholders) effective and efficient.

This approach is not without risk. The process of decentralisation is moving slowly, and there are many interests and centralising forces opposing progress. It requires strong commitment from the highest levels in Government, good understanding from those in Local Government who must implement the reforms, and then effective participation of those who stand to benefit. At this point, nonetheless, the majority of LGAs have limited understanding of the reforms, low levels of accountability, and little capacity to effectively deliver services; and there are also few capable partners (NGO or private sectors), especially in rural areas. Moreover, people within rural communities tend to have low expectations of their LGAs and leaders. In the light of these limitations, it is believed that WA is well placed to pioneer 'decentralisation and make it work', since it is technically capable, and it also has a strong policy team with established links at national level and sound understanding of the policy framework in which it operates.

Its specific target with regard to rural water supply is to deliver a total of 60,000 direct rural water beneficiaries per year by 2009-10, with additional levered [12] funds for rural water supply to serve a further 30,000 beneficiaries per year. It includes to:

- establish clear Memorandums of Understanding (MoUs) with the selected LGAs defining roles and responsibilities, and ensure that all projects supported by WA are incorporated in District plans and are 'on budget';
- build LGA capacity to develop strong water and hygiene components in their district plans;
- support LGAs to build skills and systems to coordinate, support and monitor water and hygiene projects implemented in partnership with communities, Local NGOs and the private sector; and
- identify, pilot and promote approaches/mechanisms to monitor LGA performance and to improve LGA accountability to its citizens on issues relating to the water sector;

[12] Water-levered means indirect beneficiaries. By influencing at LGA level (policy advocacy), it is believed that the LGA can implement additional projects

To pilot and demonstrate effective water and hygiene service delivery to poor urban communities not currently served by the utility

Most of WA resources are focused on rural areas, in marked contrast to investments as a whole in Tanzania, which favour meeting water needs of urban areas (often increasing service levels, rather than meeting the needs of the unserved). Without adding to this national investment imbalance, WA aims to maintain its urban investments (at ~30%); although developing a coherent 'urban strategy' is first required since its work to date (in Dar es Salaam) has been largely opportunistic.

WA thus needs to focus on water and hygiene services for urban communities excluded from utility services, but with increasing emphasis upon urban sanitation with the promotion of innovative interventions. In addition, Dar es Salaam presents an urgent and complex water resource situation with groundwater depletion, saline intrusion, and industrial and bacteriological pollution. WA aims to develop a relationship with the new Ruvu River Basin Authority and identify areas for collaboration in Water Resources Management.

The target is to serve at least 20,000 urban water beneficiaries per year by 2009-10, with an additional levered fund to deliver a further 10,000 beneficiaries per year. It is based on:

- building on WA's existing experience to develop a clear Urban Strategy to guide future WA interventions in urban areas (Dar and/or other urban areas);
- continuing existing work in Dar aimed at serving the poorest in the unplanned areas; and on
- monitoring affordability and equity of water services in Dar es Salaam, advocating for change where necessary.

To build capacity of local partners and support communities to sustain water supplies

In the past, WA has tended to be the lead implementing agency in most of its programmes. The reason cited has been the low capacity of partners to implement independently. But WA taking the lead role has not effectively contributed to building partner capacity, and even in some cases (e.g. in Kiteto) may have undermined it and increased dependency on WA.

Therefore, WA aims to transform the way it works, with increased focus on building sustainable capacity of key partners. In other words, it is believed that both LNGOs and private sector can play complementary roles with government to improve water and sanitation services, and thus MoUs with all of them have to spell out their central roles in project delivery, with WA

providing financial and organisational support, and technical advice and training where appropriate. During this process, WA is required to:

- build capacity of partner LNGOs and the local private sector, and enable them to take the implementation lead to deliver and sustain WatSan projects in cooperation with decentralised Local Government;
- encourage LNGOs to represent the interests of poor an vulnerable groups;
- provide training to communities to build their capacity to effectively manage and sustain their water supplies: support, monitoring, registration and regulation of community water supply entities;
- support LGAs to improve sustainability of community owned water facilities by developing an "enabling environment" of support from LGAs and other stakeholders; and to
- feed results of research and field experience in supporting partnerships between LGAs, LNGOs, local private sector and communities; into debate at national policy level.

To improve the sustainability of WatSan Projects and to strengthen Water Resources Management (WRM)

As outlined in Chapter 2, previous investment in the water sector has failed to provide long-term benefits because of lack of capacity to maintain the facility. WA thus needs to better understand the sustainability of their work to date, as well as the factors that influence sustainability, including issues of social inclusion, seasonal usage and livelihoods.

Likewise and prior to every water project, a water resource assessment is required; and water quality and quantity tested before commissioning a source. WA aims to:

- explore and develop relationship with emerging Water Basin Boards in the areas of intervention to identify how WA and partners might engage with key WRM issues;
- (better) understand the risks of depletion and contamination of water sources in order to identify significant environmental risks and outline appropriate mitigation measures; and to
- lobby for better regulation, monitoring and enforcement of abstraction rights.

To improve access to water, hygiene and sanitation services for specific poor and vulnerable groups by contributing to increased knowledge and understanding of poverty issues in the sector

WA claims priority to the most marginalised groups; but first a clearer analysis of who these groups are, and to specify their water, sanitation and hygiene needs is essential. WA proposes to carry out joint research where possible with specialised organisations working directly with specific groups (e.g. Help Age, Save the Children, and organisations working with groups affected by HIV/AIDS); while promoting a good understanding of which groups do not benefit from the services and the reasons for their 'exclusion'. It is thus needed to:

- develop a framework for identifying the chronic poor and vulnerable groups, their WatSan needs and appropriate interventions, in collaboration with specialised organisations;
- identify which sectors of the community are not accessing or using services and why, and use the information to improve future pro-poor interventions; and to
- monitor sector policies, investment and performance and, where necessary, advocate for and contribute to making them more pro-poor, involving LNGO partners in this process.

To develop more effective approaches to promote sustainable sanitation & hygiene

Most of the sanitation initiatives implemented in the past failed to be sustained, since they were integrated within WatSan projects using approaches of extension and subsidy, which were not appropriate. The situation has not improved, and it is known that at present sanitation only receives a small fraction of the interest and resources allocated to water.

There is thus a strong need to place more emphasis on sanitation. In rural projects, "adequate sanitation" has to be clearly defined, in order to better understand existing coverage, and to develop more appropriate, effective, and sustainable interventions. In the fast growing unplanned urban areas, sanitation is a particular challenge, since more low-cost, sustainable technical choices are required. In consequence, WA has to explore more innovative technical solutions to sanitation in both urban and rural settings, such as small scale latrine emptying services in unplanned areas of Dar, smaller lower cost and more environmentally sustainable latrine options for urban areas, and cheaper, more basic but 'adequate' latrine options for rural areas.

Equally important, there is the need to develop more strategic alliances to raise the profile of the sector, and to increase effective investment, building a closer collaboration with the MoHSW and other key partners.

The specific target is to deliver a total of 20,000 rural and 20,000 urban sanitation beneficiaries per year by 2009-10, and particularly, WA seeks to

- define "adequate sanitation" and to develop a sanitation framework and strategy to guide future interventions;
- test new innovative approaches and technologies for improved sanitation for urban poor, and for more effective pro-poor sanitation interventions in rural areas;
- investigate and pilot improved approaches to promoting effective and sustained hygiene behavioural changes in both urban and rural areas; and to
- develop strategic partnerships to address sanitation and hygiene issues and increase the investment in the sector.

To continue developing policy and advocacy work

WA aims to integrate their policy and advocacy work more closely with their service delivery programmes. Nevertheless, in the light of the Local Government Reform, if policy is to be effective it must be implemented at local level, and "improving governance of water and sanitation service delivery in LGAs" is thus required, including:

- a coherent and comprehensive translation of local government policy into local government practice;
- an appropriate use of district water point mapping and GIS to improve planning and monitoring, as an effective and transparent tool to tackle the current inequity of service delivery;
- research into key issues such as sustainability and inclusivity, in order to improve and sustain services; and

At national level, WA endeavours to advocate for additional resources (especially for rural water supply and sanitation) and improved sector efficiency and effectiveness. It has to attract additional resources from both GoT and external support agencies, but the sector first need to demonstrate that is offering poverty reducing investment opportunities.

To develop new Partnerships and Alliances

An increasing number of like-minded organisations express interest in working in the WatSan sector in Tanzania, and there is the wish to encourage and support them not only to engage by sharing information and networks as well as experience, but to establish where possible new

partnerships and alliances, especially for work in sanitation. Similarly, other types of alliances with bilateral donors (such as German KFW, World Bank …) have to be strengthened. In brief:

- To develop partnerships, alliances and networks with other INGOs, WatSan/Hygiene sector organisations, and external support agencies to promote information exchange, learning and collaboration.

Above all the previous strategic aims, WA needs to continue develop as a cost-effective and healthy organisation, since it is clearly the first step if is it to be efficient and effective. In particular, it is endeavoured to:

- prepare an operational plan and monitoring framework to implement their country programme, including identifying key indicators and/or targets for each strategic aim;
- ensure effective processes for evaluation and review;
- develop a clear organisational "learning agenda" to address key weaknesses;
- maintain strong finance controls systems but make them more programme/partner friendly; and to
- develop a funding plan to ensure financial resources are available to implement this strategy.

3.4. WATERAID AND ITS PARTNERS: ROLES AND RESPONSIBILITIES

WaterAid works in collaboration with various partners in the execution of its mandated role, including the LGAs, Partner Organisations (private sector, NGOs, CBOs – service providers) and Communities.

In essence, and as a clear response to the sustainability issue, WA implements WatSan projects through local partners building up their capacity, rather than working directly with the beneficiaries. In other words, WA's main role is the provision of financial and technical support, while the implementation and day-to-day activities related to the project work are to be organised and carried out by the local partner.

In any case, though the independence of local partner organisations needs to be respected, certain procedures must be in place to enable adequate reporting and monitoring, not only of partners' financial accountability, but also the ongoing activities. As a minimum, the work to be carried out and the related budget must be clearly specified, with all the terms and final

conditions of the agreement framed in a "Partnership Agreement" or in a "Memorandum of Understanding" (depending on the kind of partnership), and signed in both cases by the partner and WA.

The roles and responsibilities of the various parties are briefly described below.

WaterAid

As previously outlined, WA's role is moving from leadership to building up partners' capacity, in a participatory approach, as a reaction to increase the "poor" performance achieved by WatSan projects implemented in the past.

It is thus not limited to transferring funds regularly, but to work with the selected partners on a daily basis, helping them to plan and implement their work, and supporting their activities in the field. WA provides training, technical skills or other support where needed, but also motivation and confidence building; and it is done in a way that aims to reinforce the principle of working consultatively, in a similar manner in which the partners are expected to work with the villagers. Equally important, monitoring and evaluating how the partners execute their commitments is essential if the projects are to be efficient, proposing appropriate improvement measures if significant risks or technical faults are identified.

Therefore, it is not casual that although WA staff used to be made up of engineers, it is currently comprised of a more mixed skill background, endeavouring to settle in within the new more complex reality in which it works.

Local Government Authority (LGA)

The LGAs are expected to promote, coordinate and provide all the support services, including mobilisation and planning. Their main role is to ensure that projects meet national norms and standards, and to facilitate the District Support Team to carry out its commitment, in particular to support communities to embrace the community ownership and management concept.

Nevertheless, most of these services shall be provided through a third party, such as partner organisations.

District Support Team (DST)

The District support team is WA's main partnership, and as the main contact point between communities and government, its role is vital; being responsible for the entire planning and implementation of the project, quality control and sourcing of funds for its execution.

It is an integrated team made up of representatives from the relevant departments of the local authority (at least Health, Community Development, Education and Water, although where

necessary it can also comprise personnel from the Planning, Agriculture and/or Natural Resources departments); and basically it can act either as an implementer agency (e.g. WAMMA[13] Team in Dodoma) or in a more supervisory role (e.g. SAMME[14] Team in Singida). If it is to be a supervisor, WA (on behalf of the LGA) or the DST itself will contract other partners (private sector or Local NGOs) to carry out part or the overall project's implementation: e.g. mobilising the communities, constructing the waterpoints, promoting hygiene and sanitation, forming management structures at village and sub-village level for the management and operation of the waterpoints …

In any case, DST is committed to the following tasks (WaterAid – Tanzania, 2006):

- To coordinate the day to day project activities.
- To initiate the collection of baseline data on communities with the help of WatSan committees and coordinate the selection of communities to be supported.
- To coordinate and provide a linkage between partner organisations and communities.
- To provide technical support to communities, e.g. in the administration and management of contracts.
- To provide support for training and capacity building of the private sector, NGOs, CBOs and communities.
- To contract and supervise service providers where needed.
- To participate in the sensitisation, promotion, and mobilisation of communities.
- To facilitate the formation of WatSan committees and assist communities in organizing and registering them for legal ownership.
- To supervise and monitor all stages of the project cycle.
- To provide monitoring and evaluation services after commissioning and providing continuous back-up support to communities.

A distinct difference of this approach, where the implementation responsibility relies on the DSTs, is the open, transparent and objective manner in which project planning has been conducted within the LGAs. The fact that it is an inter-departmental structure makes it more difficult for particular individuals to steer the process of village selection and project implementation. In this sense, DSTs are demonstrating a working approach of how planning is

[13] WAMMA, WAwezeshaji Maji Maendeleo Afya, meaning Facilitation for Water, Development and Health
[14] SAMME, Singida Afya Maji Maendeleo Elimu, meaning Singida Health, Water, Development and Education

increasingly expected to take place in local governments, with priorities developed at village level and articulated to LGAs in a bottom-up, rather than top-down, manner. At the same time, however, WA needs to understand the efficiency of this approach, since although the funds to support this inter-disciplinary team have been shared (unequally) to date by WA (main donor), the LGA and the community, this favourable situation can change with the current implementation of the National Rural Water Supply and Sanitation Programme (NRWSSP).

Partner Organizations (Service Providers)

Partner organisations include among others, NGOs, CBOs, Consultants, Contractors, Creditors, Suppliers, Religious institutions, and the private sector (e.g. private operators); and are contracted (either by WaterAid or DST) to provide different services in case specific skills or relevant experience are required for the implementation of the Project. The roles and responsibilities of partner organisations are listed below with the relevant project component indicated in parenthesis (WaterAid – Tanzania, 2006).

- Promote the Rural Water Policy and Rural Water Supply and Sanitation Programme strategies (Community Development and Management).
- Mobilise and sensitise (All four components).
- Facilitate the establishment of a community management system (Community Development and Management).
- Capacity building and Training of WatSan committees and other community actors including pump attendants, village health workers and sanitation artisans (Water Supply, Sanitation Improvement and Community Development and Management).
- Facilitate the planning, design and construction/implementation of water, hygiene and sanitation interventions using PHAST and other promotional programs (Water Supply, Sanitation Improvement and Hygiene Promotion).
- Facilitate the operation of community schemes under contract with communities themselves (All four components).
- Facilitate the construction and operational and management of water and sanitation projects (Water Supply and Sanitation Improvement).
- Provide technical support, materials and equipment (Water Supply and Sanitation Improvement).
- Support the development of community managed monitoring and evaluation systems (Community Development and Management).

- Make notes during field work and produce reports to DST (All four components).
- Develop and disseminate Information, Education and Communication and Behaviour Change Communication materials (Hygiene Promotion and Sanitation Improvement).
- Participate in monitoring, evaluation and review of project activities (All four components).

The Community

The community is the basic unit for the planning and management of water and sanitation related services, and once it has formed and legally registered as a water committee or any other appropriate water user entity, it owns the water and sanitation facilities. In brief, each community will be expected to do the following (WaterAid – Tanzania, 2006):

- Establish a water committee/user entity, register it and open up a bank account.
- Contribute in cash and kind towards financing the WatSan scheme and be ready to fully meet its operational and maintenance costs.
- Make an informed choice on the level of service and type of technology desired.
- Participate fully in conceiving, planning, designing and construction of their water scheme.
- Raise and manage funds.
- Own, operate and manage the water scheme.
- Set tariffs, collect revenue and maintain records of accounts.
- Contract out some of the responsibilities to the private sector if necessary (previous agreement with the DST is required).
- Monitor the work of service providers.

3.5. SUSTAINABILITY APPROACH

WA is aware of how challenging the sustainability of a WSS programme is, and over the past years considerable research has been carried out, and different key indicators used, in order to seek a simple but reliable way to evaluate and improve the functionality of the water supply facility and monitor its performance.

In particular, Sugden (2003) developed a tool entitled “The Sustainability Snap-Shot”, to easily assess the sustainability of a project but without devaluing or diluting the complexity of the factors that make a waterpoint sustainable. It focussed on the financial aspects of the service, the

technical skills needed to maintain the functionality of the scheme, and the type of technology and availability of spare parts.

Likewise, other indicators/tools have been employed, with the same shared goal of evaluating whether the community fully understands the management, operation, maintenance, financial, and regulatory mechanisms of the water scheme. At least, measuring sustainability should entail evaluating which access the community has to funds and skills to carry out repairs; how it is involved in any decision-making process; the role of women and the most vulnerable groups; the sense of ownership that the community has over the waterpoint; and clearly, the state/functionality of the facility.

3.5.1. The role of WaterAid and their partners

As the emphasis of the role of local councils moves from implementation to "ensuring" the delivery of essential services, partnership approaches to supply water and sanitation facilities has become more prevalent. As previously mentioned, WA main partnership is the District Support Team (DST), an integrated team which comprises staff from the relevant departments of the local authority. In any case, a critical aspect for successful partnerships is that all partners must share the same vision and aim for the project.

WA approach, while having been effective for the implementation of the project, and having dealt well with the day-to day running of the project, has omitted perhaps one of the most crucial goals and limited its ability to ensure sustainability of the services delivered (Owen, 2006). It has inevitably left community empowerment approaches on the side lines, without considering that the project moves from an implementation phase to that of ongoing operation and maintenance.

At present, community management structures, and despite the importance of the role they will have to play to the success of the project, still lack management experience or a real partnership with the local council. Thus, and although the NAWAPO (2002) differentiates between diverse management alternatives, the process of shifting from existing VWC to more appropriate management alternatives is still at the initial stage (see Table 3.3), and it is likely to be complex and tough.

Table 3.3

Management Alternatives in WA projects [15]

Region	District	Num of Villages	Total of DPs	VWC	WUG	Trust	WUA	Private Operator	Others	No Management
Manyara	Kiteto	6	34	28						6
	Total	**6**	**34**	**28**						**6**
Singida	Singida Town	19	144		143				1	
	Total	**19**	**144**		**143**				**1**	
Tabora	Nzega	8	48	24	22					2
	Tabora Rural	3	17	17						
	Urambo	5	49	49						
	Uyui	15	63	63						
	Total	**31**	**177**	**153**	**22**					**2**
Dodoma	Dodoma Rural	37	128	125				3		
	Dodoma Urban	19	166	164			1			1
	Kondoa	22	184	142				7		35
	Kongwa	19	95	66		29				
	Mpwapwa	21	90	90						
	Total	**118**	**663**	**587**		**29**	**1**	**10**		**36**
Total WaterAid		**174**	**1018**	**768**	**165**	**29**	**1**	**10**	**1**	**44**

VWC: Village Water Committee; WUG: Water User Group; WUA: Water User Association.

As a greater chance of long-term success, the goal is to involve the community in the planning processes and to enhance their sense of ownership, and hence more support and assistance will be required for the registration of these new entities as legal bodies and for their subsequent consolidation in order to fulfil their commitment, particularly in the management of schemes and in negotiating with the local authorities.

WA is playing a crucial role in all the process, in making sure that the partnership works and that the targets are met. In fact, without WA and without its funding, there is a real danger that there will be no partnership, which clearly has significant implications both for the sustainability of the project, and for its replicability elsewhere. While WA's aim is to play a more advisory role in the project as an external facilitator, this has not really been achieved, since it has been excessively involved in the day-to-day running of the project. WA should consider taking less of a leading role in the management of the project and playing a more supervisory and monitoring role, although this is not an easy task, given the limited resources and the pressure to deliver high quality services to a tight time schedule.

[15] Data available until 2004

3.5.2. Measuring sustainability

- **Effectiveness**. The functionality of all different WA interventions[16] in Tanzania is summarized in the table below (more specific data is detailed in Annex A).

Table 3.4

Sustainability of WaterAid Interventions

Region	Num of Villages	Total	Functional		No functional		Stolen		Under Repair		Under const
		DPs	DPs	% [17]	DPs	% [17]	DPs	% [17]	DPs	% [17]	DPs
Manyara	6	34	28	87.5	3	9.4	1	3.1		0	2
Singida	19	144	133	93	2	1.4	1	0.7	7	4.9	1
Tabora	31	177	103	72.5	33	23.2	6	4.2		0	35
Dodoma	118	663	415	63	97	14.7	18	2.7	129	19.6	4
Total WaterAid	**174**	**1,018**	**679**	**69.6**	**135**	**13.8**	**26**	**2.7**	**136**	**13.9**	**42**

In brief, Table 3.4 shows that WA has supported the installation or rehabilitation of 976 waterpoints (679 functional Distribution Points (DPs), 135 non-functional DPs, 26 stolen DPs and 136 DPs under repair) in 174 villages, serving a combined population of 254.500. At the same time, there are 42 additional waterpoints under construction in 12 of these 174 villages.

In these 174 villages:

- there is full system functionality in 86 villages, with 408 functioning drinking water points (and 4 other DPs under construction);
- there is partial functionality in 55 villages, with 271 functional DPs and 235 not functional (103), stolen (20), under repair (111) or construction (1); and
- there is zero functionality in the balance of 33 villages, with 100 DPs which are non functional (32), stolen (6), under repair (25) or under construction (37).
- WA-supported schemes have an overall functionality rate of 70%.

Nevertheless, if the same data is analysed differentiating between two periods, more reliable and accurate conclusions can be reached.

[16] Data available until 2004
[17] Percentages over the total DPs implemented (without considering DPs under construction)

WaterAid Interventions before 2000

Table 3.5

Sustainability of WaterAid Interventions before 2000

Region	District	Num of Villages	Total	Functional		No functional		Stolen		Under Repair		Under const
			DPs	DPs	%[18]	DPs	%[18]	DPs	%[18]	DPs	%[18]	DPs
Manyara	Kiteto	3	8	6	75	2	25		---		---	
	Total	**3**	**8**	**6**	**75**	**2**	**25**					
Singida	Singida Town	0	---		---		---		---		---	
	Total	**0**										
Tabora	Nzega	2	15	11	73.3	4	26.7		---		---	
	Tabora Rural	3	17	15	88.2	2	11.8		---		---	
	Urambo	0	---		---		---		---		---	
	Uyui	10	35	25	71.4	10	28.6		---		---	
	Total	**15**	**67**	**51**	**76.1**	**16**	**23.9**					
Dodoma	Dodoma Rural	25	73	42	57.5	30	41.1	1	1.4		---	
	Dodoma Urban	16	88	63	71.7	18	20.5	6	6.8	1	---	
	Kondoa	17	156	27	17.3	9	5.8		---	120	76.9	
	Kongwa	15	46	33	71.7	13	28.3		---		---	
	Mpwapwa	15	54	40	75.4	11	20.8	2	3.8		---	1
	Total	**88**	**417**	**205**	**49.3**	**81**	**19.5**	**9**	**2.1**	**121**	**29.1**	**1**
Total WaterAid		**106**	**492**	**262**	**53.4**	**99**	**20.2**	**9**	**1.8**	**121**	**24.6**	**1**

Table 3.5 demonstrates the lower sustainability achieved in projects implemented before 2000:

- During this period, WA has supported schemes in 106 villages, with the installation or rehabilitation of 491 DPs (262 functional DPs, 99 non-functional DPs, 9 stolen DPs and 121 DPs under repair).
- The overall functionality rate is roughly 50%, with 262 functioning drinking waterpoints.
- Kondoa District has more than 75% of DPs implemented before 2000 under repair, decreasing significantly the global performance achieved in other districts of intervention. Otherwise (without considering Kondoa District), the functionality would rise up to 70%.

[18] Percentages over the total DPs implemented (without considering DPs under construction)

WaterAid Interventions from 2000

Table 3.6

Sustainability of WaterAid Interventions from 2000

Region	District	Num of Villages	Total	Functional		No functional		Stolen		Under Repair		Under const
			DPs	DPs	%[19]	DPs	%[19]	DPs	%[19]	DPs	%[19]	DPs
Manyara	Kiteto	5	26	22	91.6	1	4.2	1	4.2		---	2
	Total	**5**	**26**	**22**	**91.6**	**1**	**4.2**	**1**	**4.2**			**2**
Singida	Singida Town	19	144	133	93	2	1.4	1	0.7	7	4.9	1
	Total	**19**	**144**	**133**	**93**	**2**	**1.4**	**1**	**0.7**	**7**	**4.9**	**1**
Tabora	Nzega	7	33	12	85.8	1	7.1	1	7.1		---	19
	Tabora Rural	0	---		---		---		---		---	
	Urambo	5	49	19	57.6	12	36.4	2	6.1		---	16
	Uyui	6	28	21	75	4	14.3	3	10.7		---	
	Total	**18**	**110**	**52**	**69.3**	**17**	**22.7**	**6**	**8**			**35**
Dodoma	Dodoma Rural	18	55	42	76.4	8	14.6	3	5.4	2	3.6	
	Dodoma Urban	8	78	76	97.4	2	2.6		---		---	
	Kondoa	6	28	22	78.6				---	6	21.4	
	Kongwa	5	49	46	93.9	3	6.1		---		---	
	Mpwapwa	12	36	24	72.7	3	9.1	6	18.2		---	3
	Total	**49**	**246**	**210**	**86.4**	**16**	**6.58**	**9**	**3.7**	**8**	**3.3**	**3**
Total WaterAid		**91**	**526**	**417**	**86**	**36**	**7.4**	**17**	**3.5**	**15**	**3.1**	**41**

Table 3.6 shows how sustainability increases if only projects implemented from 2000 are considered:

- WA has supported schemes in 91 villages, with the additional installation or rehabilitation of 485 DPs (417 functional DPs, 36 non-functional DPs, 17 stolen DPs and 15 DPs under repair). WA is also carrying out the construction of 41 further waterpoints.
- The overall functionality rate is 86%, with 417 waterpoints in operation.
- In Urambo District, the functionality drops down to 57%.

Figures 3.3. and 3.4. show the overall functionality of the districts of intervention, depending on the period when waterpoints were constructed.

[19] Percentages over the total DPs implemented (without considering DPs under construction)

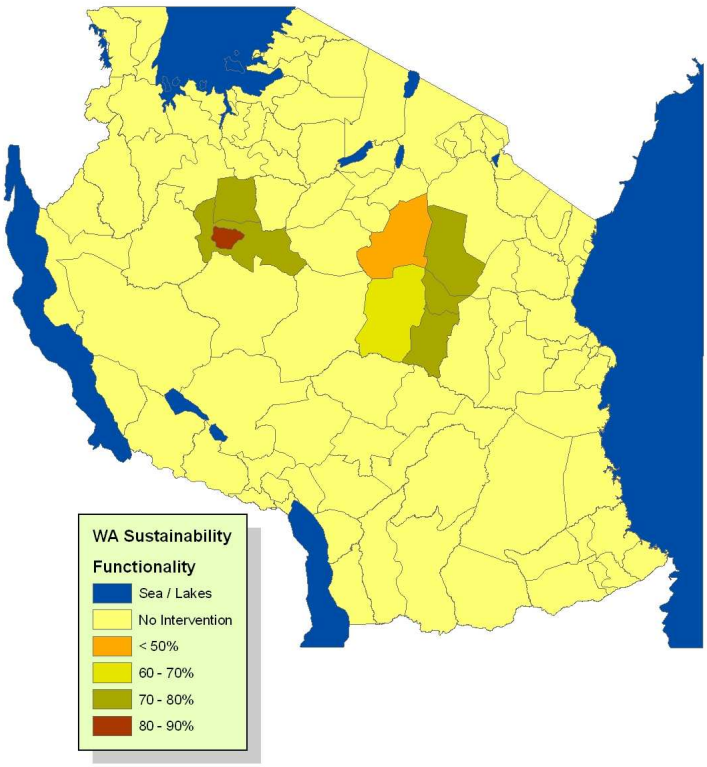

Figure 3.3. Sustainability of WaterAid Interventions (before 2000).

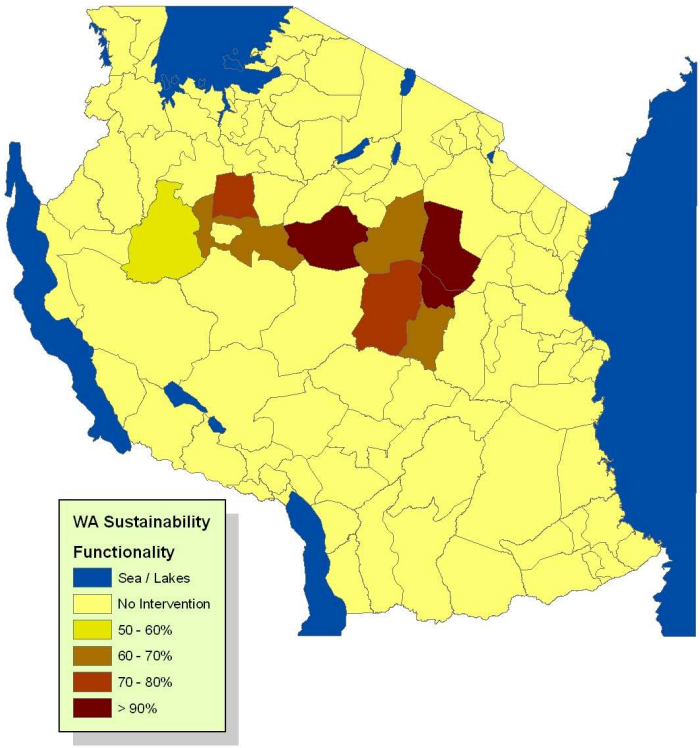

Figure 3.4. Sustainability of WaterAid Interventions (from 2000).

Data thus confirms that there are issues with regard to the effectiveness of WA interventions to be addressed, since roughly only half of the villages where WA has funded water facilities still have fully functioning systems, and that up to 30% of all waterpoints installed or rehabilitated with WA funding are no longer working. It is also true that the functionality rate increases if only the waterpoints implemented after 2000 are taken into consideration, although it is still early to say whether the new schemes will prove to be sustained. In any case, it can be seen from the graph below that the rate of non-functionality (including stolen and under repair DPs) is gradually declining over the past years.

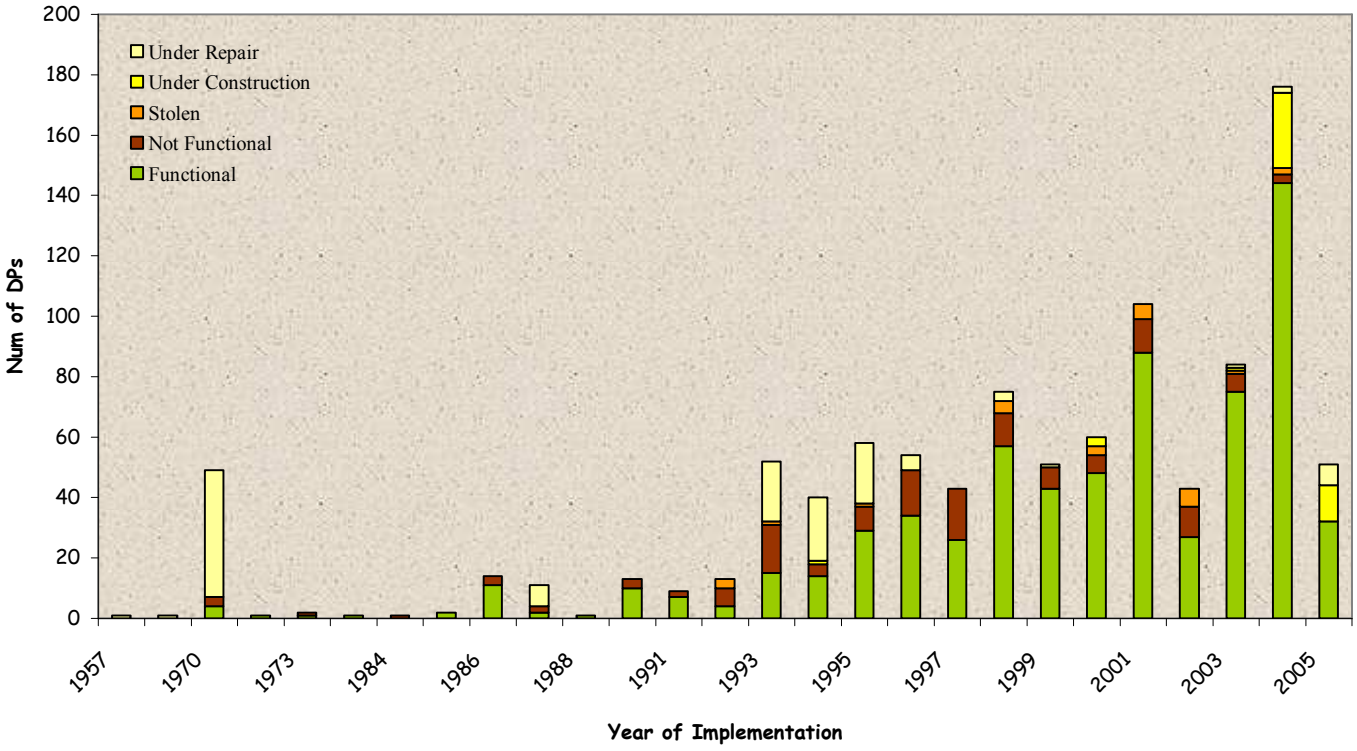

Figure 3.5. Functionality of WaterAid Interventions.

The widespread causes that undermine sustainability are both technical and social, although the core problem appears to be the management of water schemes by Village Water Committees (VWCs). As WA has become increasingly aware, this management model is the least effective of those now advocated under the National Water Policy (Owen, 2006), being subject to institutional bureaucracy, risk of political interference and a high probability of corruption in the management of water funds. Therefore, and given that the VWC management model is known to be flawed, WA is promoting a switch to alternative

management structures. In this respect, leasing the operation of the facility to the private sector can be an effective solution (particularly in mechanised extraction schemes); although it is also true that Village Councils and LGAs have little or no experience in water services management leases, resulting in contradictory contracts that have often given significantly more benefits to the operators than to the VWCs, user groups or water consumers. WA has an advocacy role to play in ensuring that such leases are legally-sound, fair and workable.

- **Efficiency.** WA needs to understand if the collaboration with their partners, mainly with the District Support Team, is still the most efficient and cost-effective approach.

  It has yielded one outcome of clear value within the LGAs, by providing new skills and working methodologies, most of which are closely aligned with the ones that are now required to put into practice under the local government reform process; such as bottom-up planning from villages to District Councils, transparency in LGA decision-making and budgeting, and the engagement of local residents in decision-making rather than the imposition of centrally-generated ideas. Beyond this, nonetheless, the operational advantages that the collaborative effort has brought to the water sector are not entirely clear, and while it seems intuitively to be a good idea, there are significant issues with regard to its efficiency unsolved (Owen, 2006).

  Are there benefits to be derived from a team of people from different departments planning a village water scheme? Are all team members required at each operational stage? Is the process driven by need, or because of the existence of the institution? Is the integrated structure any better than, for example, departmental heads planning water, sanitation and hygiene activities discretely, with technical input from their respective subordinates?

  The key aspect is thus how to improve the sustainability of water scheme management and then determine the appropriate players and their roles.

  Moreover, the current implementation of the NRWSSP is virtually attracting all financial resources available for the water sector, which are being directed to District Water and Sanitation Funds (DWSF) to meet the World Bank's stipulation that 5% of scheme investment costs should come from the District Councils. Therefore, if in the past the LGAs covered several expenses (such as salaries and the provision of office space) and contributed to co-fund these teams, this advantage is not any longer assured. The cost-effectiveness of this partnership, once a strong benefit for WA, has been somewhat reduced.

In addition, and since it has been previously outlined, while the delivery of water services can be achieved within a short space of time; management systems, latrine construction, and good hygienic practices require more time as these rely on behaviour change. It thus may be necessary to consider two budget lines – one short term, big budget for water supply (which may be could be co-funded using the RWSSP funds), and a more modest, but longer term budget which decreases dramatically as the project reaches particular targets.

In respect of the service levels, WA has realized that in some cases the government definition of coverage is unachievable, and has thus decided that other levels of service (e.g. an improved waterpoint within 1.000 m of the household) are both more realistic and more sustainable in the long-term (a waterpoint within 400 m of every household would prove too costly for the fewer beneficiaries using it to maintain, leading to disrepair and wasted investment). Similarly, WA advocates a review of the national guidelines for drinking water quality standards (too permissive in some parameters, e.g. fluoride, faecal contamination), although in some cases they have been adopted in order not to condemn a water source, especially when alternatives may be even more polluted.

- **Equity**.

  Selection of areas of intervention: WA aims to provide WatSan services to the least served communities/villages, dealing with the existing differences and inequity in coverage with regard to access to improved water sources and sanitation. In fact, Water Point Mapping is to be incorporated into planning and monitoring systems as an efficient and transparent tool to identify areas with low WSS coverage, allowing then to perform in those areas and reduce the gap between served and unserved population.

  WA has a large number of other criteria to select an area of intervention, including among others (i) population affected by water related diseases; (ii) distances from social services; (iii) water technology available; (iv) accessibility by vehicle; (v) status of water supply available in the community; and (vi) existing water facilities and the capacity of partners.

  Gender and Poverty: There is careful consideration of gender issues both in the design of a project and in the monitoring of activities, since gender equity is currently a key criteria in the development of the management systems (particularly the water user groups), demanding equal numbers of men and women's involvement in all activities (including training programmes). In this respect, although there is usually no problem with the

involvement of women in activities, giving them the space to attend meetings or take official positions is still challenging in some cases.

In the same way, the provision of water for the most vulnerable members of the community is somehow taken into consideration. In theory, those who cannot collect water themselves have water delivered to them by a neighbour, and are entitled to a daily quota (roughly 80 litres per household per day). The poor are also considered, and while ensuring that subsidies are effectively used, there is a strong need to relate them to capital costs, with O&M costs recovered in full from the rest of users.

Nevertheless, WA is aware of the existing difficulties to reach these vulnerable groups, since cost-recovery is more limited and programmes more expensive. It is thus needed to balance coverage and equity; and in fact, if decentralised local government can improve service delivery to meet the MDGs (and tackle the problem of coverage), it will be increasingly the role of NGOs to ensure that the poorest and most vulnerable also access basic services.

- **Replicability.** The critical aspect, beyond the issue of replicability, is to understand what the essential ingredients of a project are that make it successful, insofar as it is successful, and what needs to be added or taken away to improve the project so that it can be replicated elsewhere, but with a more robust approach to longer-term sustainability.

  Above all, the extent to which the construction of water sources is replicable mainly depends on how successful the Water User Groups (WUGs) are in collecting the monthly contributions from users. Thus, the reasons that prevent some WUGs from collecting funds need to be clarified and overcome, if the long-term sustainability is intended to be achieved. At this point, an exchange at community level between different WUGs/WUAs could be arranged to share experience on how to achieve full cost recovery for operation and maintenance of water schemes.

  In addition, if a project is to be replicable within a community, the latter needs to have greater input into the planning and implementing aspects of the project. There is thus an opportunity to build a new partnership between WA, the DST (either acting as the implementer agency or in a supervisory role) and the community that may be more challenging to work within, but which has a greater chance of long-term success. Clearly, without a strong understanding and support of the project by the local council, this partnership approach will fail. Likewise, availability of strong NGOs and private sector that

are well-established and do not need extensive support is also desirable, since they will still be playing a key role as providers of technical and financial assistance.

3.6. CASE STUDY: VISITING WAMMA TEAM IN MPWAPWA (DODOMA)

Although during its initial years of operation in Dodoma, WA delivered water supply services through the Anglican Church's Development Department, in 1991 it established a new and innovative implementation partnership with the local government authorities, through an inter-departmental structure (District Support Team) known as WAMMA.

Since then, and for most of the last 15 years, WAMMA teams have taken primary responsibility for the implementation of water supply activities at village level across Dodoma Region; and in fact, while in other regions WA directs most of its funding through NGO partners (e.g. Singida), the WAMMA model in Dodoma has relied almost entirely upon implementation by District Council staff.

In particular in Mpwapwa, WAMMA started implementing WSS projects in 1993, and the table below summarizes their intervention in this district.

Table 3.7

Data of projects implemented by WaterAid in Mpwapwa [20]

Village	Population (Census 2002)	Population to be served	Year Construct	Num of DPs	% Function	% of full coverage met by functional DPs
Kisokwe	3,887	1,633	---	4	100%	42%
Kisima	5,117	---	1993	3	100%	---
Chunyu	4,263	3,222	1993	5	80%	76%
Minguwi	1,498	---	1993	3	0%	---
Itende	544	544	1994	1	100%	100%
Luhundwa	3,159	1,770	1994	6	100%	65%
Kikuyu	2,227	2,011	1995	4	100%	95%
Kimagai	2,578	---	1995	2	---	---
Iwondo	3,087	2,161	1996	3	67%	70%
Kidenge	3,334	2,354	1996	5	80%	65%
Chitemo	4,352	4,265	1996	3	67%	98%
Iyenge	4,597	3,927	1997	6	100%	95%
Kingiti	1,926	1,926	1997	4	100%	100%
Lukole	3,552	3,481	1997	5	20%	98%

[20] Data from WAMMA or the District Water Department, in Mpwapwa

Village	Population (Census 2002)	Population to be served	Year Construct	Num of DPs	% Function	% of full coverage met by functional DPs
Kinusi	4,008	3,807	1998	8	100%	94%
Inzomvu	3,124	289	2000	10	80%	90%
Godegode	3,039	1,368	2002	4	---	45%
Gulwe	3,847	2,616	2002	6	100%	68%
Mzogole	1,061	477	2002	2	---	75%
Kitati	1,115	892	2003	4	100%	80%
Mafene	1,278	1,022	2003	5	100%	80%
Mwanawotta	2,605	2,084	2003	4	100%	75%
Idahu	836	836	2004	3	100%	100%
Kiegea	2,439	2,438	2004	5	100%	100%
Wangi	2,457	1,720	2004	3	100%	70%
Chilendu	4,464	4,241	2005	12	83%	95%
Mwenzele	3,223	---	2005	---	---	---
Idodoma	1,377	1,377	2005	4	100%	100%
Malolo	1,692	1,372	2005	4	100%	100%
Lufusi	704	402	2005	2	100%	50%
Galigali	1,901	1,801	2005	2	100%	70%
Lwihomelo	3,541	3,541	2005	17	100%	100%
Mlunga	1,945	1,362	2005	3	100%	70%
Vikundi	---	362	2005	---	---	---
Total WA	**88,777**	**59,301**	**---**	**152**	**85%**	**---**

3.6.1. Major Findings

WAMMA Team. WAMMA is respected as an implementing agency by both the local authority and the community, and there is evidence that it has brought a more progressive and transparent way of working to the District Council. For instance, equity criteria are considered to select new villages (such as low coverage of WSS facilities and prevalence of water-related diseases); and although community willingness is clearly considered, cash contribution by villagers to the capital cost of the project is desirable but not essential.

At the same time, though some support is still needed in specific areas (such as financial accountability or technical issues); WAMMA is fairly prepared to assume the leadership in a WSS project.

Nevertheless, there is no evidence to confirm whether WAMMA optimizes their limited resources (particularly human resources), or to prove whether a multi-sectoral approach has added significant value to the water sector.

Funding WAMMA Team. WA's former ability to leverage financial and material commitment from the District and enter into water projects on a joint-funding basis has been somewhat undermined by the redirection of LGA financial resources to the NRWSSP (DWS Funds), leaving WA as the sole lender of most WAMMA activities (DWD is still providing office space). Moreover, the cost assumed by WA to implement activities through WAMMA is further increased because it works largely on the basis of inputs (e.g. materials, allowances, fuel) rather than on outputs (e.g. productivity demonstrated, water schemes functional). At the same time, the infrastructure and equipment of WAMMA (vehicles, computers …) is in a deteriorating condition, and thus a new injection of capital to upgrade it is needed if they are to continue performing effectively and efficiently.

Since the cost-effectiveness of working with WAMMA has therefore been reduced, and the current implementation of the NRWSSP significantly alters the WatSan sector scene, there is a need to adapt or to develop a new approach if this partnership is aimed to be efficient and sustained.

Community participation. In the light of the different technologies applied, different approaches to engage the community are in place.

As a rule, the community is involved in all the stages of the process (planning, technology or scheme selection, allocation of the DP's within the village …). In some cases, nonetheless, there has been limited scope and few opportunities for villagers to influence significantly where to locate water schemes or which extraction technologies to install, since there has been no possibility of choice. Therefore, the tools of participatory development have been used more as a way of ensuring that communities have been appropriately informed, rather than a means by which to give them meaningful opportunities to determine the nature of water supply investments and have a real say in the way they are managed.

Community management. Most of the scheme management has been delegated to existing Village Water Committees, and in Mpwapwa it is considered to be an appropriate management alternative, since they are organized and rather representative of the people. However, VWC are not legally recognised, and WAMMA is thus supporting communities to create and register new water entities (mainly WUGs and WUAs).

With regard to long-term functionality of the facilities, roughly only 50% of the projects are properly sustained by the community, and in some cases collecting money from the beneficiaries is still challenging (e.g. in gravity systems, some users dislike to pay for water

because in theory nothing is to be "maintained", and thus there is no need to collect money). There is a strong need to focus on sustainability issues.

Sanitation and Hygiene promotion. WAMMA works close to communities to improve sanitation facilities (by training them in latrine construction or with demonstrative latrines in schools, hospitals or other public buildings); and foster behavioural changes regarding to hygienic habits (using PHAST methodology or Child to Child campaign).

Gender issues and vulnerable groups. Women are empowered in both WAMMA team and VWCs, playing a significant role not only as a representative percentage but being involved in decision-making processes. Similarly, vulnerable groups are considered as well.

Technology and Availability of spare parts. In Mpwapwa, appropriate technology includes water from protected springs, handpumps or deep boreholes with pumps/diesel engines, depending on the specific conditions that prevail in the area of intervention.

Figure 3.6. Spring protection in Lwihomelo (Mpwapwa).

Figure 3.7. Handpump (shallow well) in Isinghu (Mpwapwa).

When minor components break down and require repair or standard replacements, there is no significant problem in finding the necessary spares (either through private sector outlets or contracting one of the technicians from the District Water Department). Nevertheless, the more significant problems come about when major scheme components break down, since replacements are not available at district level (no investment has been done recently) and then outlets in Dodoma, Morogoro or even Dar are the only possibilities.

Service Levels. WAMMA aims to achieve the targets set by the NAWAPO, although in some cases they are both unrealistic and unsustainable (e.g. boreholes that do not reach the specified capacity -25 l/cap per day-; scattered villages where distances to the closer DP have to be more than 400 m …). In this respect, and according to Table 3.7, it can be seen that 1 DP often serves more than 250 people. Likewise, WAMMA is committed to ensure that the water quality at least fulfils the Tanzanian standards for rural areas.

3.7. KEY OBSERVATIONS

There is evidence that WaterAid is valued and respected at both national and local level. It is probably the most experienced INGO in Tanzania implementing WSS projects, and in recent years, WA has also become a leading policy analyst in the water sector. More effort is needed, nonetheless, to closely integrate the policy work and service delivery programmes, translating national government policy into local practices, and linking them with community level outcomes.

It is also clear that WA has tended to lead implementation, and there is thus a need to learn to work more effectively through partners, building up their capacities and enable them to take the operational lead. At the same time, its partnership with local authorities (and particularly with District Support Teams) as WA implementing agencies must be critically evaluated. DSTs have made a meaningful contribution to LGAs beyond the water sector, by demonstrating increased transparency in the way planning decisions are made. In contrast, it has not being demonstrated that this approach has led to outcomes significantly more sustainable than other alternatives; and in addition it is resulting to be a non cost-effective way for WA to implement water projects, given the declining co-funding availed by LGAs, the teams' input-based way of working, the costs of their allowances and the poor state of their capital assets.

In essence, WA has to identify the critical water sector needs in a fairly changing scene (because of the implementation of the NRWSSP), and determine the appropriate approach in which these needs can be efficiently fulfilled by DSTs. Conceptually, working with the government is likely to be an appropriate alternative in terms of replicability, but to optimize the functionality and methodology of this team is becoming crucial.

In terms of participatory methodologies in the water sector, WA should consider different approaches in future for different communities and different water supply conditions, with a more tailored approach rather than a prescriptive project implementation formula. Where there is a strong likelihood that communities will be involved in management (e.g. a gravity-fed

scheme), then a more participatory design and implementation approach is justified. Where the system is likely to be technologically complex and best managed by a private operator (e.g. pump and engine schemes), opportunities for community participation will be lower and the implementation approach should be modified accordingly.

Finally, sustainability of water facilities is still a challenge, and tackling the causes that undermine the functionality of a waterpoint is thus required to ensure sustained, equitable and inclusive services. Among others, it includes (i) more research about the suitability of each water scheme management options, (ii) promotion of private sector; (iii) better understanding of the factors that inhibit poor and vulnerable groups' use of common water points; (iv) creation of a reliable spare parts chain and availability of trained technicians at district level; and (v) better protection of water sources (IWRM).

4. STRATEGY OF THE WORLD BANK

4.1. TOWARDS THE MDGs, THROUGH THE WORLD BANK FUNDED "NATIONAL RURAL WATER SUPPLY AND SANITATION PROGRAMME"

Tanzania joined The World Bank Group in 1962. Since then, World Bank (WB) assistance has focused on helping the country to achieve sustainable economic growth while reducing poverty. In essence, it is committed to promote higher growth, poverty reduction, and institutional reforms to improve governance and service delivery; and in accordance with the main directions of the Government of Tanzania, it is done in a way that tackles four areas of strategic importance (The World Bank, 2000):

- Private sector and infrastructure development, to support the Government's objective of making private sector the engine of growth.
- Sustainable rural development, to improve the livelihood of the majority of the poor who live in rural areas.
- Improved social infrastructure, to improve social indicators and enhance access for the poor to essential public services.
- Public sector reform and institution building, to increase the effectiveness of public service delivery and improve governance.

The framework to decide which projects to undertake and fund is based on several criteria including (i) Government preferences (ensuring that their ownership role is being enhanced through the process), (ii) the comparative advantage of the WB, (iii) the relative areas of strength of the donor community, and finally, on (iv) those areas where the impact on poverty will be greatest; aiming to maximize the efficient use of the WB and other partner's resources.

With regard to the water and sanitation sector, the WB's strategy is based on the following features:

- in its service delivery programmes, its main partner is the Government (particularly the Ministry of Water), and the WB fully recognizes and promotes its leadership in defining the development agenda;
- WB implements through the Government, adopting a supervisory role instead of directly working in the field. To effectively monitor and evaluate the performance of the Ministry of Water is thus of key importance.
- the interventions are switching from projects to programs for a more effective and efficient use of aid resources;

- in its programmes, in both the rural and urban context, the WB aims to integrate water supply, sanitation and hygiene promotion, and water resources management;
- WB aims to fulfil the NAWAPO, and accordingly, WB expects to enhance WatSan services delivery by promoting a participatory approach within the beneficiaries. Likewise, it will provide assistance for strengthening institutional capacity and enable the Government to assume its commitment; and
- WB plays a strong advocacy role, and it works closely with the Government to develop the national sector policy context.

In brief, WB's approach is based on a strong partnership with the Government (particularly the Ministry of Water), handing over the leadership and the ultimate responsibility of the programmes to them (ensuring their ownership). The strategic focus is on both funding programmes to provide safe water and improved sanitation; while influencing sector-related policy reform processes.

4.1.1. Description of the Programme

The WB seeks to collaborate with the Ministry of Water (MoW) in the development and subsequent implementation of the appropriate policy framework that allows the achievement of the water and sanitation sector-related targets, set by the Government.

According to the NAWAPO, the water sector covers three different components: rural water supply and sanitation, urban water supply and sewerage, and water resources management. In consequence, the WB Programme has focused on these three areas of intervention, and it has been executed in two different stages (Figure 4.1.):

- Pilot Test: The main goal of the pilot phase was to develop, on a consultative basis with other key stakeholders, the national programmes in each specific area; and to consolidate them into a comprehensive Water Sector Development Programme (WSDP).
- Water Sector Support Project: In the light of the lessons learnt during the pilot test, the three national programmes have been formulated and brought together under one single investment (Water Sector Support Project) and one regulatory regime (Water Sector Development Programme).

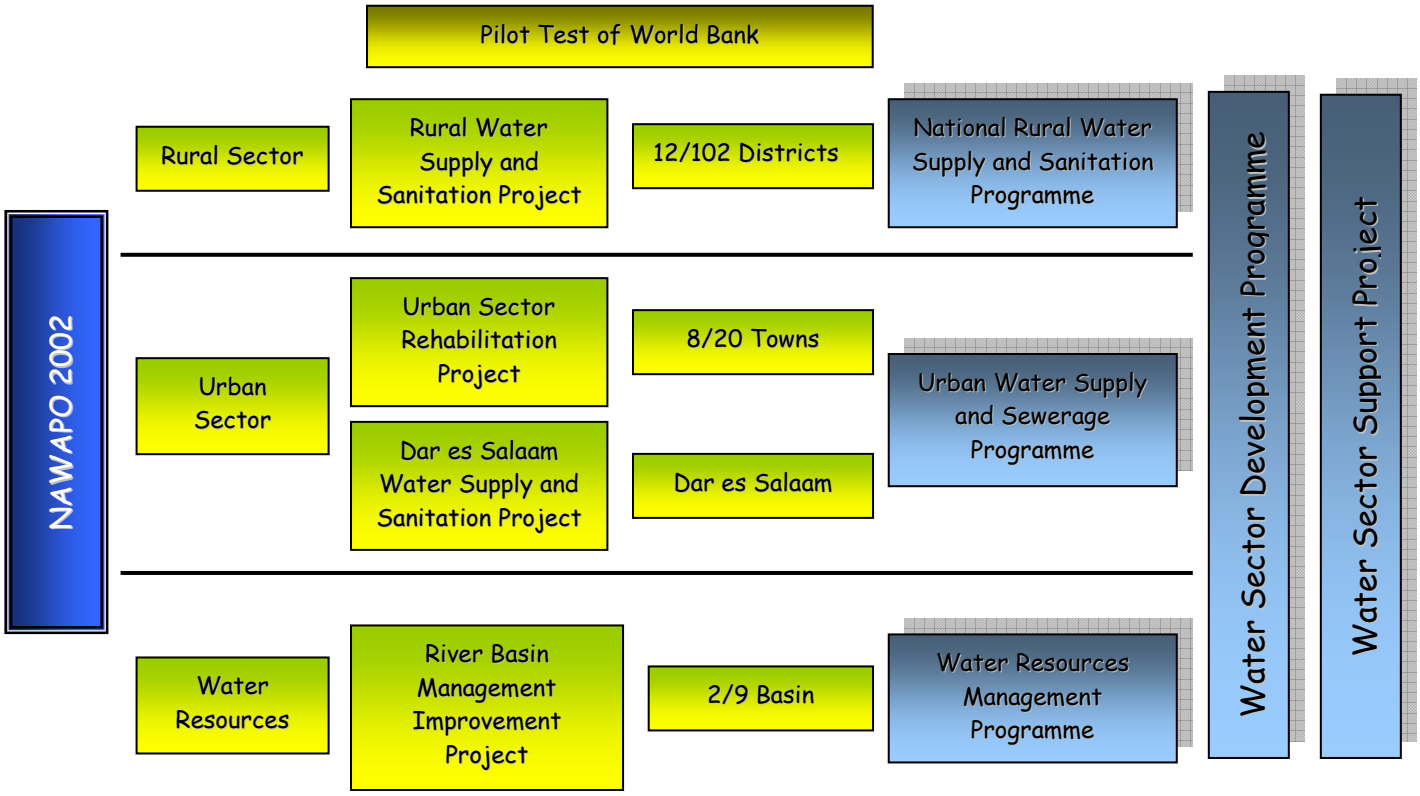

Figure 4.1. World Bank Programme in Tanzania.

The Rural Water Supply and Sanitation Project (The World Bank, 2002). The MoW (on behalf the Government of Tanzania) launched the Rural Water Supply and Sanitation Project (RWWSP) in 2002, in order to enable the rural population to have access to reliable and sustainable water supply and sanitation services. The project was designed initially to cover 30 villages in three districts (Kilosa, Mpwapwa and Rufiji), followed by nine additional districts (Handeni, Igunga, Iramba, Kiteto, Kondoa , Kongwa, Manyoni, Morogoro Rural and Singida Rural). The project is intended to develop water supply systems by employing a variety of technological options, in order to roughly serve about 250 villages and benefit 750,000 people. It focussed on three different components:

- To develop a district implementation model initially in the three districts of Rufiji (Coastal Region), Mpwapwa (Dodoma region), and Kilosa (Morogoro Region) and gradually expand it to about 12 out of Tanzania's 115 districts. It included, among others, support to the establishment and strengthening of operational capacity of District Water and Sanitation Teams (DWSTs), and assistance to communities in the proper management and operation of the WSS facilities implemented.
- To construct RWSS schemes in about 250 communities (12 districts), including the construction or the rehabilitation of (i) existing open wells, (ii) drilled boreholes equipped

with hand pumps, (iii) powered pumps and solar pumps, (iv) spring tapping, (v) transmission lines, (vi) distribution systems, (vii) reservoirs, (viii) latrines and (ix) community sanitation infrastructures.

- To prepare the National Rural Water Supply and Sanitation Programme.

More specific, the outputs of the RWWSP are detailed in the following table, and the villages of intervention are depicted graphically in Figure 4.2., indicating which Distribution Points (DPs) are already implemented or are under construction[21].

Table 4.1[22]

Data of the Rural Water Supply and Sanitation Project

Region	District	Num of Villages	Population Census 2002 [23]	Total DPs Implement.	Total DPs to be Developed	Population to be Served [23]	Investment [24] US$ x 1,000
Dodoma	Mpwapwa	15	50.7	218	0	53.1	1,375
Dodoma	Kongwa	10	33.2	15	111	31.2	1,581
Dodoma	Kondoa	10	28.1	0	107	26	506
Manyara	Kiteto	10	24.4	0	133	28.3	1,270
Morogoro	Kilosa	14	40.5	116	92	41.1	846
Morogoro	Morogoro rural	10	30.8	66	136	50	1,042
Pwani	Rufiji	15	47.4	153	17	55.3	571
Singida	Manyoni	10	13.2	0	80	20.6	1,057
Singida	Singida Rural	10	26.8	0	132	32.7	1,805
Singida	Iramba	10	31.3	0	123	30.3	1,198
Tabora	Igunga	11	52.2	21	266	70.1	1,530
Tanga	Handeni	10	40.0	4	119	30	1,581
Total World Bank		**135**	**418.5**	**593**	**1,316**	**468.7**	**14,360**

[21] Data of some villages is not available, and thus some villages are not shown in the map
[22] Data from the *RWSSP: Report of the 8th Supervision Mission*, GoT - MoW (2007)
[23] Population / Beneficiaries x 1,000
[24] Investment including the hard component (construction of schemes), and excluding the soft component (capacity building)

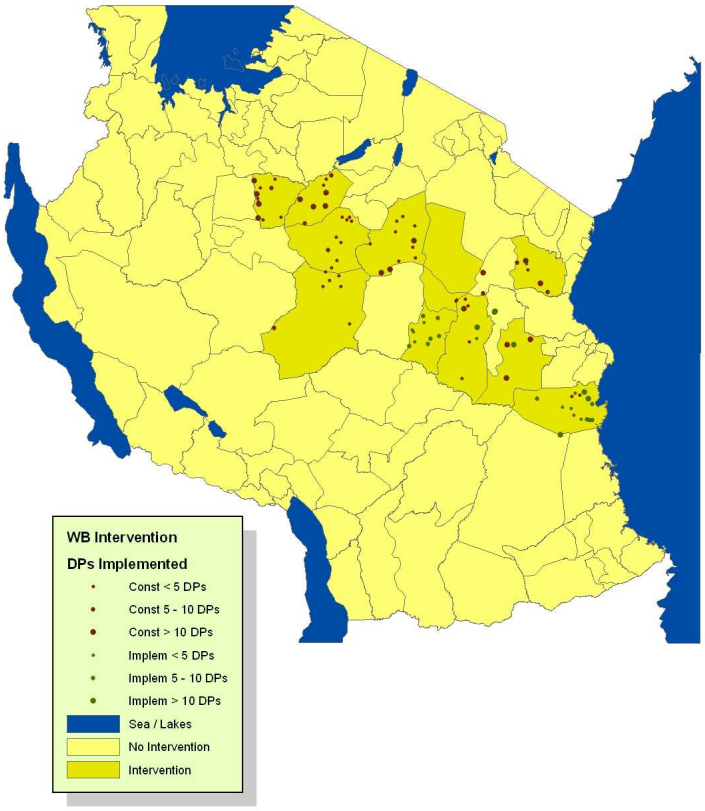

Figure 4.2. Intervention of the World Bank in Tanzania.

Dar es Salaam Water Supply and Sanitation Project (The World Bank, 2003). In Dar es Salaam, about 85% of city's population has some kind of access to piped water supply (data from the Household Budget Survey), although the service is erratic with most households getting it less than six hours per day.

Similarly, regarding to sanitation, only about 10% of the population is currently served by sewerage connected to either an ocean outfall or to nine decentralized waste water stabilization ponds; about 20% use septic tanks and the rest (roughly 70%) use pit latrines. Nevertheless, the sewerage infrastructure built in the early 1980s is at various stages of collapse.

The MoW prepared and is implementing through DAWASA (Dar es Salaam Water and Sewerage Authority) the "Dar es Salaam Water Supply and Sanitation Project", in order to address the current situation, which includes:

- rehabilitation and extension of water supply facilities;
- rehabilitation and extension of wastewater facilities;

- community Water Supply and Sanitation Program, in order to provide a minimum service to low income communities that may not immediately benefit from the piped water network; and
- institutional strengthening, mainly focused on supporting and assisting DAWASA, commercial operator to be in charge of the services. It would be linked to the "privatization" of DAWASA's operations.

Urban Sector Rehabilitation Project (The World Bank, 2005). The Urban Sector Rehabilitation Project consisted of a large programme of infrastructure rehabilitation works and institutional reform activities covering eight project towns in Tanzania (Arusha, Iringa, Morogoro, Mbeya, Moshi, Mwanza, Tabora, and Tanga), as well as Dodoma and Dar es Salaam. It was to be implemented by the Regional and Local Governments. The project objectives were sustainable economic development and urban poverty alleviation, and among others, it had two components of particular relevance:

- Rehabilitation and expansion of infrastructure services in the eight project towns and Dodoma, including the establishment of an improved pit latrine program and the provision of water supply and sewerage services.
- Institutional strengthening, consisting of Technical Assistance and Capacity Building to Municipal Councils and Urban Water and Sewerage Authorities (UWSA).

River Basin Management Improvement Project (The World Bank, 2004). Tanzania's ability to manage scarce water resources became a national issue in the early to mid 1990s. New opportunities in agriculture, and the greater demand for water for irrigation and hydropower, together with the long dry season and several years of less-than-average rainfall, contributed to water scarcity and conflicts; while the lack of information on water quantity and quality, and an inadequate framework for tackling water issues, severely constrained sustainable water resource management.

The project's objectives were:

- to strengthen the Government's capacity to manage water resources and address water-related environmental concerns at the national level, and in the Rufiji and Pangani River Basins (Tanzania has defined nine river basins for water resources administration); and
- to improve irrigation efficiency of selected smallholder traditional irrigation schemes in these two basins.

It was to be achieved through a stronger institutional, regulatory and incentive framework for basin management, enhancing stakeholder participation.

Water Sector Support Project (The World Bank, 2007a). As a result of the development of the three national programmes, the Ministry of Water has launched in 2007 the Water Sector Support Project (WSSP), based on four main components:

- Strengthening of Water Resources Management, at Basin Level: This component focuses on strengthening basin institutions for planning and management of water resources, as well as intervening in stress-reduction and prioritizing water resources management.
- Scaling-up of Rural WSS Services Delivery to Meet MDGs, at District Level: This component is to provide support to Local Government Authorities (LGAs) in the provision of water and sanitation services through the implementation of District WSS Plans. This entails improvements in water supply (mainly shallow wells and boreholes with hand pumps, small gravity, and mechanized borehole piped schemes) and sanitation services (latrine promotion and handwashing program) to rural communities, health centres, and schools.
- Scaling-up of Urban WSS Services Delivery to Meet MDGs, at Utility Level: This component provides support to improve utility practice in Dar es Salaam, regional and district capitals, as well as small towns and national multi-village schemes in the provision of water and sanitation services. At the same time, it is to promote the execution of utility business plans, and support improvements in water supply (mainly piped schemes) and sanitation services (sewerage systems, latrines promotion, handwashing program). In particular, services to the urban poor are to be emphasized.
- Support to Sector Institutional Strengthening and Capacity Building, at National Level: This component supports the MoW to efficiently assume its new role, fosters the sector coordination, and promotes sector capacity building, in particular MoW staff and associated water-related institutions, community-based organisations (CBOs), non-governmental organisations (NGOs), and water user associations (WUA).

In brief, the most significant interventions in the water and sanitation sector that World Bank has funded are summarized in the table below.

Table 4.2

Data of World Bank Programme in Tanzania

Project	Sector	Status	Responsib. Agency	Implement. Entities	Total Bank Financ. US$ Mill	Total Project Cost US$ Mill
Rural Water Supply and Sanitation	Water Supply and Sanitation	In Execution	MoW	LGAs	26	27.7
Dar es Salaam Water Supply and Sanitation	Water Supply (70%); Sewerage (20%); and Sanitation (10%)	In Execution	MoW	DAWASA	61.5	164.6
Urban Sector Rehabilitation	Water, Sanitation and Flood protection (48%); Others (52%)	Closed	MoW	Local and Regional Govt	105	141.3
River Basin Management Improvement	Irrigation and drainage (55%); Central Govt administration (45%)	Closed	Ministry of Agriculture / MoW	Ministry of Agriculture / MoW	26.3	30.8
Water Sector Support	Water Supply (50%); Flood Protection (30%), Sanitation (10%); and Sewerage (10%)	In Execution	MoW	MoW / BWOs / UWSAs / LGAs	200	951

Last but not least and as previously mentioned, the Bank is playing an important advocacy role and national level, establishing strong linkages with the MoW. In fact, the lessons learnt from the pilot test (mainly funded by the WB) were the basis to formulate the three sector-related national programme: The National Rural Water Supply and Sanitation Programme; The Urban Water Supply and Sewerage Programme; and The Water Resources Management Programme, all of them integrated and to be implemented through The Water Sector Support Project.

Nevertheless, and since goal of this study is to focus on the rural context, the following chapter only describes the intervention of the WB with regard to water and sanitation in rural areas.

4.2. STRATEGIC CONTEXT AND RATIONALE [25]

4.2.1. Rationale for the World Bank Involvement

Tanzania is facing a complex water resources development and management challenge. The nation is endowed with sufficient freshwater resources (rivers, lakes, aquifers, and wetlands) to meet all of its current water needs; and clearly, water is playing a central role in the performance of key sectors of the economy and the livelihoods of Tanzanians. Nevertheless, water security remains an elusive goal, since an inappropriate institutional framework is threatening the ability of the country to ensure:

[25] From the *Project Appraisal Document 22.875-Tz: Rural Water Supply and Sanitation Project*, The World Bank (2002)

- water supply and sanitation services (WSS), as a fundamental basic need for productive livelihoods; and
- irrigation, hydropower developments, and energy security.

In this respect, roughly 50% of the population lacks access to safe water and sanitation services, resulting in a high prevalence of water-related diseases, particularly in rural areas. Similarly, the performance of key sectors of the economy (energy, agriculture, industry, livestock, mining, tourism, and fisheries) is highly vulnerable to droughts, floods, and inadequate management of water resources. It highlights the urgent need for investments in integrated water resources development and management, in good governance, and in the protection and conservation of water sources. In this respect, the sector development needs thus to urgently tackle, if it is to be efficient, a weak water resources management framework; low water and sanitation service levels in both rural and urban areas; and an inadequate sector coordination and institutional capacity.

In the light of this challenging situation, the Government (assisted by the WB) has embarked on a major reform process, and developed an appropriate water sector policy environment accordingly. The reforms, nonetheless, have been slow, and in some cases, to integrate water supply, sanitation and water resources has been inadequate and has not brought the expected results. Therefore, greater progress, faster reforms and significant investments in water supply and resources infrastructure are needed to ensure meeting both the Government's (MKUKUTA) and the MDGs' sector targets. In this respect, the Government of Tanzania (GoT), in collaboration with the WB, has adopted a road map for sector transformation in order to improve water resources governance and increase services delivery. It is first embodied in the National Water Sector Development Strategy, and then consolidated and put in a functional framework through the Water Sector Development Program.

The WB's involvement aims to maintain the momentum in sector reforms, initiated during the implementation of different related projects (some already closed projects –i.e. Urban Sector Rehabilitation Project, River Basin Management Improvement Project-; and others still ongoing projects -i.e. Rural WSS Project, Dar es Salaam WSS Project-); as well as to provide opportunities for scaling up the commenced work, mainly through the Water Sector Support Project (WSSP). It is seen as the most effective approach to position Tanzania to meet its MDGs' targets for water supply and sanitation, as well as to secure water resources for sustained economic growth and poverty reduction.

4.2.2. Lessons learned from the past

The WB has been supporting and assisting the MoW for the last three decades in the implementation of WatSan projects, and based on the gained experience and the lessons learned from the past, a tailored approach has been in place to better adapt to an unsettled and changing policy framework. In brief, the WB considers that:

- the benefits of growth have not reached the poor, and social indicators and access to social services have deteriorated;
- the WB has not managed to address the lack of good, reliable information, particularly in the social sectors, and their importance for constructing a welfare monitoring system; and
- the WB has over-estimated implementation capacity, particularly in sector ministries. Equally, it has over-estimated the pace of institutional reforms and capacity building.

In particular in the rural sector, water projects implemented within the "free water" delivery approach consisted of discrete, donor-financed, geographically isolated, or sector-specific projects with no central coordination and no institutional memory at the national level. In addition, community capacity constraints were not addressed systematically, and after project closure, there was no residual capacity for maintenance of the schemes. Therefore, and although the projects contributed to local increases in coverage in WSS services, the overall benefits from the services were uncertain because of sustainability issues.

Similarly, water resources considerations and constraints were not tackled adequately, leading sometimes to less-than-optimal investments in costly infrastructure. In this respect, the impact of neglecting water resources management has severely impacted the hydropower and irrigation sub-sectors, as well as in urban water supply and other water using sectors in recent years; resulting in inadequate physical and institutional capacities to buffer against the consequences of droughts and floods, endemic in Tanzania.

Looking back, a broad range of lessons have been learnt:

- The NAWAPO insists on the establishment of community-owned water supply systems. This is a new situation, as water supply systems had previously been owned by the government, and so the ability and capability of the communities to manage these projects has to be ensured. Despite of being challenging, the importance of community involvement have been already demonstrated and it is well established in several bilateral and NGO managed projects implemented in Tanzania, being well accepted by communities.

- In order to enhance the demand-based approach, communities should apply for funding only when they have met participation criteria, and in particular collected capital cost contribution.
- Community willingness to pay for services is often much higher than expected, but this is often not reflected in government cost sharing policies, which always provide high levels of subsidies.
- Communities need assistance in planning facilities, training and deciding how to manage them.
- The private sector usually responds well; competition between suppliers should be enhanced and alternative ways of packaging participatory and construction activities should be considered to improve service. Better ways for ensuring spare parts availability in the local market should also be developed.
- Sustainability relies greatly on the capacity of the WSS committee to assume their functions; training should start very early in the project cycle.
- More attention must be given to gender considerations, sanitation and hygiene education components so as to achieve lasting results; women have a greater role in decision making and are better empowered to facilitate community action.

Taking everything into account, the adoption of the revised NAWAPO in 2002 and the recently developed water policy framework aim thus to demonstrate that sustainability is achieved if (i) the community manages the scheme, (ii) appropriate tariff is set to ensure ongoing operation and maintenance, (iii) the government is responsible for facilitation and conflict resolution, and (iv) the private sector is enhanced.

4.3. OBJECTIVES AND STRATEGIC AIMS IN THE RURAL SECTOR [26]

The WB's overall mandate in Tanzania is, as previously mentioned, to support the Government to achieve sustainable economic growth, to reduce poverty, and to undertake institutional reforms to improve governance. More specific, regarding to the rural WatSan sector, the Bank seeks to:

- contribute to achieving the development targets set in the MKUKUTA, which are consistent with the MDGs of reducing by half the percentage of the population without access to WSS services by 2015;

[26] From the *Project Appraisal Document 22.875-Tz: Rural Water Supply and Sanitation Project*, The World Bank (2002); and from the *National Rural Water Supply and Sanitation Programme*, GoT - MoW (2006)

- support the process of GoT's decentralization under the Local Government Reform Programme;
- promote community participation in the provision of local infrastructure; and to
- encourage private sector participation in service delivery.

In this respect, according to the NAWAPO and the sector-related targets set by the Government, the pilot test was implemented through the Rural Water Supply and Sanitation Project (RWSSP), and the subsequent National Rural Water Supply and Sanitation Programme (NRWSSP) has been recently formulated, both with the overall objective of providing improved and sustained access to water and sanitation services in rural communities. In brief, the key strategic aim is to **promote decentralized, district-based implementation, and community-managed WSS service delivery to the rural communities.**

Access to improved water supplies is a pillar of the Poverty Reduction Strategy (MKUKUTA), and therefore, the core problem to be addressed is the inadequate supply of clean and safe water, and the low standard of sanitation that prevails in rural settlements. It should be a decentralized and demand-responsive delivery approach, and it clearly has significant implications for agencies involved in the rural water sector and the way they operate. Therefore, enhancing capacities at village and District level to deliver sustainable and equitable water and sanitation services, within the framework of decentralised local government, is essential to enable them to fulfil their commitment. In particular:

- the role of the MoW needs to rapidly shift from direct service delivery to policy formulation, quality monitoring, evaluation and assurance, and coordination of sector development activities;
- responsibilities for daily coordination of service delivery, decision-making authority and control of resources are to be delegated to district councils;
- 'top-down' planning should be replaced with a more participatory process that includes initiatives of the local sub-district governments and communities; and
- water management entities are needed to become fully involved in key aspects of management, including ongoing operation and maintenance of the WSS facilities.

The specific targets are to increase the proportion of rural population with access to clean and safe water from 54% in 2003 up to 65% in 2010, up to 74% in 2015 and up to 90% by 2025; and to provide basic sanitation to 95% of people and to 100% of schools by 2010. They are to be achieved facilitating, among others:

- support for the provision of water supply and sanitation services to communities that have demonstrated an effective demand. In particular, a community is required to establish and register an appropriate water user entity, contribute in cash towards the capital cost, and demonstrate its willingness and ability to operate and maintain its water supply scheme;
- a participatory approach to mobilize communities and to involve beneficiaries in planning, designing constructing, operating and maintaining their schemes, as an effective way to ensure ownership and thus long-term sustainability;
- technical assistance to promote efficient, economic and sustainable rural water supply schemes and sanitation facilities; which are appropriate, low cost, affordable and acceptable to the beneficiaries, through private sector provision of goods and services and public sector regulation, facilitation, promotion, coordination and support; and
- integration of water supply, sanitation provision and hygiene promotion to maximize health benefits.

Equally important, financial, technical and environmental aspects are of key importance and therefore needed to be carefully addressed if the intervention aims to be sustainable.

Financial Aspects. In accordance with the NAWAPO, the funds for implementation of the projects come from different sources which includes the following: the WB contributed 90% of the project costs through the GoT and channelled to the respective District Council; the District Councils contributes 5% of the capital cost; and the communities who are the really beneficiaries of the projects contribute another 5% of the capital cost from their established Water Accounts. Upon completion of the work, communities are required to raise 100% of the full operation and maintenance of their scheme expenditures.

Technological Aspects. The WB aims to standardize pumping equipment, handpumps, powered pumps and submersible pumps; and therefore equipment already installed in other water schemes within the area of intervention should be selected.

Similarly, spare parts for handpumps and maintenance services would be available to communities through a network of private supply agents, district spare parts outlets, and/or certified installation and repair technicians to be established by handpumps suppliers. In addition, the Project should provide training to small private contractors and operators/caretakers within the community, and capacity building to qualified technicians at district level.

In order to monitor the performance of the schemes, WB suggests carrying out annual independent technical audits of WatSan projects including designs, procurement procedures, construction quality, management arrangements by communities and private sector

participation; these audits would also review implementation of the environmental management plan and achievement of social objectives.

Environmental Aspects. An environmental assessment should be carried out and a mitigation plan prepared prior to any intervention, in order to effectively ensure protection and regulation of water sources, protection of water intakes, and proper disposal of waste water and sludge from pit latrines; while reducing the impact of construction, and avoiding over grazing near newly developed water points.

Likewise, the project is designed to sensitize communities to the potential environmental issues of their projects, and train them in maintenance and sustainable operations of water and sanitation facilities.

4.4. THE WORLD BANK AND ITS PARTNERS: ROLES AND RESPONSIBILITIES

The WB is not an implementing agency, and therefore it does not directly work with the recipient organisations. As previously outlined, it relies on a strong partnership with the MoW, who assumes the overall responsibility during the implementation of the project. Nevertheless, the management and coordination of the day-to-day activities is committed to the LGAs, which undertake the primary responsibility for implementation of rural water supply and sanitation improvements. Clearly, the majority of District authorities are currently not capable to perform efficiently, and therefore the MoW is to provide technical oversight and appropriate assistance, as well as capacity building support.

At the same time, it is a demand-driven approach, and the community plays a central role, so their participation in all different stages should be guaranteed. In this respect, communities are to be assisted by external service providers to prepare their project proposals, to plan and manage their water supply facilities, and to promote sanitation and hygiene.

This approach is not without risk, and it requires strong monitoring mechanisms at all different levels to ensure that each actor is assuming its commitment and to evaluate its performance. Therefore, the WB's role should not be limited to periodically transfer funds to the Government, but to effectively supervise the ongoing activities as a reliable mechanism to ensure the long-term sustainability of the project.

The roles and main responsibilities of all different actors are outlined below.

The World Bank

In essence, the WB plays a supervisory role, since the entire implementation is committed to the MoW. Nevertheless, it should not be misjudged, since the WB is currently the only financing agency with sufficient resources to replicate on a national scale WatSan programmes.

In this respect, its responsibility should not be limited to routine supervisory inspections, but to ensure the efficiency and effectiveness of the project and to advocate for other approaches where necessary. There is thus a need to assume a more proactive role, and working closely with other key stakeholders (particularly the MoW), it should (better) understand the risks inherent in the programme (regarding to its sustainability), promptly identify unexpected poor performance, thoroughly comprehend the causes that are leading to unsustainability, and promote appropriate improvement measures.

It is certainly a different approach, and because of the magnitude of the intervention, it has to be carefully understood since the achievement of the sector-related targets is clearly dependent on its long-term sustainability. The WB hands over the entire responsibility to the MoW, fully respects its independence in terms of schedule and procedures, and relies on the capabilities of the key partners to carry out the Programme. In theory, there are no reasons to believe it will not work. Nevertheless and as previously mentioned, a reliable monitoring system is essential to evaluate the progress of the project, determine its performance, and then modify the strategy accordingly.

Ministry of Water

The Ministry of Water (GoT – MoW, 2007a) will be responsible for the overall implementation of the project, and it is committed to oversee project preparation and implementation, maintain contact with other projects (and promote replicability where possible), facilitate sharing of experiences, and make recommendations for policy review.

In brief, the MoW has to undertake the following tasks:

- To provide support at district level, at least to establish the District Water and Sanitation Team (DWST); to prepare the District WSS Plan (DWSP) endorsing policy principles; and to establish the District WSS Fund to which the Project would make financial contributions;
- To consult key stakeholders during the preparation and implementation of the project;
- To build up capacities of all implementing agents and intermediaries (at district and community levels); and

- To put in place a management information system (MIS) for documenting lessons learnt during process implementation.

Local Government Authority

At the district level, the Local Government Authority (GoT – MoW, 2007a) has the overall decision-making responsibility, committed to the management and coordination of all the activities carried out within its administrative area.

Nevertheless, and prior to receive the required funds to implement a WatSan project from the MoW, the LGA is required to satisfy a set of conditions to demonstrate financial accountability and technical capacity to fulfil all the responsibilities assigned (e.g. the LGA will be required to have at least one qualified District Water Engineer). At the same time, the LGA is committed to the following responsibilities:

- to provide 5% of the total capital costs of the project as its contribution, either from local community contributions or from its own sources of funds;
- to address all the environmental and social impacts of proposed WatSan projects;
- to identify in a participatory manner the RWSS projects to be financed, and assess their viability (both economic, technical and environmental);
- to carry out the RWSS projects with due diligence and efficiency and in accordance with sound technical, financial, managerial, social and environmental standards and practices;
- to properly report (on a quarterly basis) the performance of the RWSS projects to the MoW; reflecting the operations, resources and expenditures, in accordance with sound accounting practices;

Equally important, the LGA is expected to establish an interdisciplinary and inter-departmental District Water and Sanitation Team (DWST), which is formed to take on the daily organization, management, and monitoring of the rural water and sanitation programme. It is made up of department heads or senior officers in relevant LGA departments, including: District Executive Director (DED); District Planning Officer (DPLO); District Water Engineer (DWE); District Health Officer (DHO); District Community Development Officer (DCDO); District Education Officer (DEO); and the District Treasurer (DT).

District Water and Sanitation Team

The DWST has the responsibility of coordinating the day-to-day activities within its LGA regarding to WatSan projects, including planning, selection of communities, and appraisal of facilities and management plans. The intention is that senior professionals from different departments work together in a team to jointly plan, implement, and monitor activities, and thus

benefit from the inter-sectoral thinking and action that is generated through this teamwork. It is not a legal structure, but an operational arrangement to facilitate coordination of the inputs of the different departments that have responsibilities for water and sanitation development.

The DWST is expected to (GoT – MoW, 2006b):

- assess the soundness of applications submitted by communities and select projects eligible for financing. In this respect, apart from the minimum social, financial and technical criteria, all projects would also be appraised against environmental safeguards and poverty impacts in order to ensure that less served communities, usually the poorest, are supported;
- establish linkages between communities, service providers and the private sector;
- ensure the quality of goods, services and works;
- technically support the community where necessary;
- assist communities to obtain resources for projects;
- assist communities to contract the services of other sector actors as required; and to
- monitor and evaluate the progress of the project and suitably report to the LGA.

Service providers

The main role of service providers (private sector, NGOs, consultants …) is to satisfy specific services or skills that can not be provided neither by the LGA nor by the community, and that are required for the project implementation. It includes technical service providers and facilitation service providers (GoT – MoW, 2006b).

- **The private sector** would be contracted either by the District or the communities to develop a range of commercially-viable services related to RWSS, including planning, design, construction, supervision and ongoing operation and maintenance. It should also supply construction materials, pumping equipment and its spare parts and replacements.
- **Technical Services Providers** (Consultants) should be contracted to assist Districts to develop their RWSS Programmes and to build capacity for implementation (complex planning, design, and construction supervision activities) and post construction management of maintenance. In fact, DWSTs are expected to learn about programme development, management, and monitoring and evaluation, primarily through working with consultants (the job training).
- **Facilitation Services Providers** (Consultants) would be contracted for each LGA to mobilise and assist communities to plan and manage their water supply facilities and to promote sanitation and hygiene, and it will be done through a participatory approach. The

Water and Sanitation Committee and caretakers will learn necessary skills primarily through on-the-job training. They will be advised to establish direct contact and maintenance contracts with supply chain agents for acquisition of spare parts and arrangement of maintenance services. The DWSTs will monitor progress at the community level and can also provide front line technical assistance.

- **NGOs** would be requested and trained to systematically include poorest segments of the community, and ensure gender balance in the planning and implementation of WatSan projects. NGOs would also promote hygiene campaigns (PHAST methodology, Child to Child …) to ensure that sanitation issues are properly taken care of. In addition, NGOs would closely work with groups that are more vulnerable to the spread of HIV/AIDs, in particular itinerant construction and extension workers.

Communities

The Village forms the basic unit for planning and management of rural water supply and sanitation facilities, and in fact they are to own the facility. Each village is first required to form a Water Committee or another appropriate Water User Entity, which has to be legally registered. Similarly, and assisted by Technical Service Providers, it has to choose the most suitable and cost-effective option (water supply scheme), based on the level of service, the water source available and appropriate technology, and operating costs.

In terms of sustainability, it is strongly dependent on the community financial cost sharing. Therefore, not only will be assessed the community's willingness to pay, but it will required to provide a minimum upfront cash contribution of 5% of the estimated project cost in cash, (not in kind), and meet all the expenses for operation and maintenance of the facilities through user fees.

The roles and responsibilities of the communities are to (GoT – MoW, 2006b):

- initiate demand for improvements of facilities and contribute in cash and in kind (demand-responsive approach);
- plan and design their facilities and establish and legally register a management system for them;
- address equitability of service provision (especially to vulnerable groups), gender issues, revenue collection, provision of services (construction, operation, maintenance, training needs), and environmental management of catchments (water source protection);
- participate in the construction of their facilities and/or supervise the activities of construction executed by service providers;

- own the facilities;
- operate and maintain the facilities themselves or contract the services of a private operator; and to
- carry out monitoring and evaluation.

4.5. SUSTAINABILITY APPROACH

The WB is aware of the magnitude of the challenge. It is not only to achieve the targets set by the MDGs, but also to sustain the facilities after projects completion. The NRWSSP aims to gradually increase the current service coverage regarding to access to safe water and sanitation, and it clearly entails a massive investment (both economic and human). In consequence, there is no room for failure, and the Bank is thus required to thoroughly monitor the progress of the programme, by using the appropriate set of indicators.

There are many inter-related issues that directly affect the overall functionality of the water scheme, and all of them should be carefully analyzed. WB considers, nonetheless, that sustainability mainly depends on (i) qualified trained staff at all levels, (ii) an integrated approach where both water supply and sanitation are essential, and on (iii) a participatory approach which involves and coordinates all key stakeholders in the water sector as well as the recipient organizations. Equally important, sustainability is to be achieved when (The World Bank, 2007a):

At community level:

- a demand-responsive approach is in place;
- the community is involved throughout the project cycle;
- the community selects the technology based on appropriate knowledge and understanding of the associated investment and ongoing operation and maintenance costs;
- the village committee or the water management entity is established, strengthened and empowered, enabling to perform its relevant duties and responsibilities;
- the community is willing and capable to manage and sustain WSS services; moving from the (still) existing culture of ‘free water’ to the need of achieve full cost-recovery;
- the Village Water Funds are assessed including at least ongoing operation, long-term maintenance, and subsidies to the poor; and the revenue collection is in place;

At district level:

- the LGAs are qualified in accordance with the NAWAPO;

- the DWST have been established and is to assume their commitment;
- the required goods (construction materials, equipment, spare parts and replacements) are available on the local market and affordable to the community;
- the private sector is involved and capable to provide the required services;
- the environmental impact related to the project has been carefully considered and addressed (deforestation, soil erosion, human activities and depletion of water sources);
- the water sources are suitably protected; and
- a relationship based on collaboration and mutual cooperation between the community, the LGAs and the MoW is in place.

At national level:

- a legal and adequate framework has been formulated, aiming to improve the institutional arrangements needed to decentralize Rural WSS functions to local governments; and
- an appropriate Management Information System has been implemented at district level and is providing the required information to monitor the progress of the programme.

4.5.1. The role of the World Bank and their partners

The NRWSSP has been launched, and it is expected to achieve ambitious national targets in a twenty-year period. It represents, as previously mentioned, a significant investment in the water sector, and it is certainly the major opportunity for improving service delivery in the water and sanitation sector in both rural and peri-urban areas. Therefore, it should be implemented in a way that, considering both technical and social issues, long-term functionality of the facilities is ensured, although this approach is clearly more complex (more stakeholders are involved) and demands more time to produce the expected outputs.

In this respect, the WB is probably the only financial agency capable to fund (it is the main lender of the NRWSSP) and promote such initiatives, and it is not without risk. The overall responsibility is to be undertaken by the Ministry, but the most relevant role in terms of sustainability falls on both the community and the DWST, in accordance with the promoted principle of "decentralisation by devolution".

In theory, there are mechanisms to ensure that the funds to the District will not be transferred unless the recipient organisations are suitably qualified and prepared, but it is also true that on a whole, they all lack resources and capabilities. It is not only to fulfil a set of conditions (financial accountability, qualified technicians …); but to assume the leadership during the project implementation, which should entail among others the sufficient ability to effectively

manage the (limited) resources, to effectively implement WatSan facilities, to foster a demand-driven and participatory approach to involve the beneficiaries, and to guarantee the functionality of the scheme once the project is completed. At the same time, to monitor and identify inefficiencies during the project should be essential, and through a learning-based approach, improve the strategy accordingly in order to achieve the expected results. The MIS, nonetheless, has not been yet implemented, and it is thus undermining the effectiveness of the monitoring during these first stages of the programme.

An inexperienced private sector is a further constraint that should be urgently tackled, since they are to be key players within the current institutional framework. As previously stated, water supply has been the Government's domain in the recent years, and the private sector has been under-developed. It clearly lacks skills and experience to satisfactory deliver WatSan services (particularly in the rural areas), and building up their capacities is therefore needed. In this respect, the services and the goods supplied should be affordable to the community, and contracts between beneficiaries and service providers should be fair and equitable (the current capacity of the communities to negotiate with private operators in the water sector is very limited).

Equally important, the community should be empowered during the entire process, building up capacities and establishing a democratic and representative water entity. In fact, the main problem needed to be addressed is the lack of management skills and the mistrust of the community to their leaders, which can seriously threaten the sustainability of the waterpoint. Therefore, the process to shift from existing VWC to more inclusive and transparent entities should be encouraged.

4.5.2. Measuring sustainability

- **Effectiveness**. The functionality of all different WB interventions[27] in Tanzania is summarized in the table below (more specific data is detailed in Annex B).

[27] Data of the interventions implemented through the RWSSP, and thus prior interventions are not included

Table 4.3[28]

Sustainability of World Bank Interventions

Region	District	Num of Villages	Total	Functional		No functional		Under Const
			DPs	DPs	%[29]	DPs	%[29]	DPs
Dodoma	Mpwapwa	15	218	218	100	0	---	0
Dodoma	Kongwa	10	126	15	100	0	---	111
Dodoma	Kondoa	10	107	0	---	0	---	107
Manyara	Kiteto	10	133	0	---	0	---	133
Morogoro	Kilosa	14	208	116	100	0	---	92
Morogoro	Morogoro rural	10	202	66	100	0	---	136
Pwani	Rufiji	15	170	153	100	0	---	17
Singida	Manyoni	10	80	0	---	0	---	80
Singida	Singida Rural	10	132	0	---	0	---	132
Singida	Iramba	10	123	0	---	0	---	123
Tabora	Igunga	11	287	0	---	0	---	287
Tanga	Handeni	10	123	4	100	0	---	119
Total World Bank		**135**	**1,909**	**572**	**100**	**0**	**---**	**1,337**

In brief, WB has supported the installation or rehabilitation of 572 water points in 43 villages, serving a combined population of 138,254 (2002 Census). At the same time, there are 1,337 additional water points under construction in 92 more villages. In consequence, the WB is funding projects in 135 different villages.

In these 135 villages:

- there is full system functionality in 43 villages (population of 138,254), with 572 functioning drinking water points;
- there are 1,337 additional DPs under construction in 92 villages.
- WB-supported schemes have an overall functionality rate of 100%.

The following map (Figure 4.3.) shows the overall functionality rate in the districts of intervention, considering the DPs which are under construction.

[28] Data from the *RWSSP: Report of the 8th Supervision Mission*, GoT - MoW (2007)
[29] Percentages over the total DPs implemented (without considering DPs under construction)

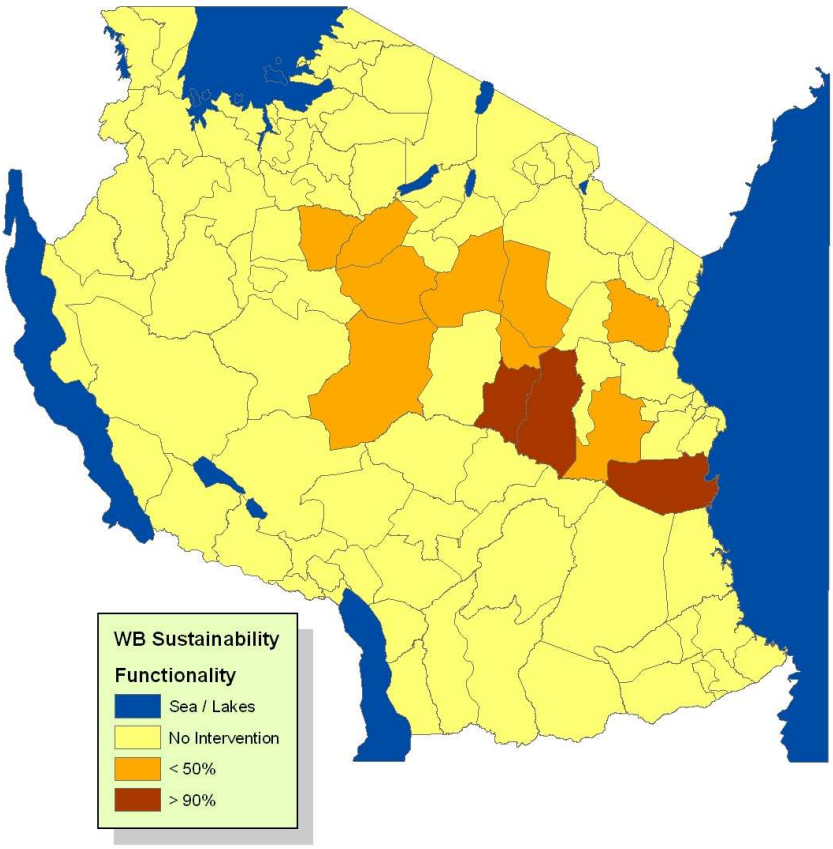

Figure 4.3. Sustainability of WB Interventions.

As shown in Table 4.3, data seems to confirm an unexpectedly high functionality rate, since all the DPs implemented are supposed to be functioning. Nevertheless, there are two aspects that should be considered. First, all the projects completed have been implemented during the last four years, and handed over to the community two years ago, so it is still early to verify whether they will prove to be sustained. Second, the report from which the data has been obtained only differentiates between DPs implemented and DPs under construction, assuming thus that all DPs implemented are functioning, which is clearly inaccurate (see case study in Mpwapwa, with more reliable data source).

In this respect, and although there are no obvious reasons to predict that WB approach will not work and achieve long-term sustainability, there are key aspects that should be addressed to prevent waterpoints from breaking down.

As previously mentioned, to monitor the performance of the project is essential, and despite the planned implementation of MIS at district level, in the majority of them it is still missing. As a result, DWSTs (where established) have to rely on data and information reported from the community (it often lacks accuracy and consistency), without appropriate means to verify it, and therefore being unable to effectively evaluate and

supervise the performance of the project. The WB approach is based on a comprehensive monitoring of the ongoing activities at all levels, and it has to carefully follow up whether the expected outputs of each phase have been achieved. Therefore, data and a reliable mechanism to monitor it are thus crucial.

Similarly, to provide a set of core indicators as the basis of the monitoring data is needed to optimize the resources available. In this respect, the supervision of a project should focus on different issues:

- Economic indicators, such as cash contribution from both communities and LGAs, expenditures …
- Social indicators, in particular gender issues, affordability and inclusivity (of vulnerable groups).
- Technical aspects, including functionality rate of the DPs, causes of non-functionality, water resources, availability of spare parts and replacements …
- Partner's performance, considering capacity building at all levels, establishment of the DWST, number of WUAs / WUGs legally registered, involvement of the private sector …

- **Efficiency.**

The efficiency of the WB approach clearly relies on the capabilities of all different partners to efficiently perform their commitment.

The first step to be efficient is to clearly understand which are the responsibilities to be undertaken at all levels, and therefore more effort is needed to clarify the NAWAPO and other sector-related policies (in particular at community level).

Secondly, to build up capacities and provide appropriate resources is required to ensure that the partners are capable to fulfil their commitment. As previously mentioned, the reality is far from being encouraging, since districts often lack resources (both human and equipment) and capabilities. For instance, the NAWAPO stipulates that at least one qualified water engineer is required for the District to be qualified, but if a qualified team and appropriate additional resources (e.g. means of transport) are not in place, the probability to perform efficiently is somehow reduced.

Moreover, and as stated in the previous section, to promptly identify inefficiencies during the project execution is the basis to promote suitable alternatives to address them, and to advocate modifying the approach where needed. Therefore, a comprehensive Management Information System should be in place, and Districts suitably trained to efficiently use it.

Finally, the NRWSSP has created a new partner, the DWST, which is to be committed to the entire project implementation (similar to WA approach). It should yield positive outcomes within the District (transparency in decision-making processes, easy integration of water and sanitation …) and this multi-disciplinary team has to be seen as an opportunity to combine different perspectives (both social and technical), all valuable to develop a WatSan project. Nevertheless, all this operational advantages have to bring clear outputs to the water sector in order to confirm whether this approach is efficient or not.

With regards to the WB's role, it is needed to closely supervise the overall efficiency of the strategy. It relies on governmental partners to implement the programme, and to promptly identify whether their implementation capacity has been over-estimated is thus essential if the programme is to be sustained.

- **Equity**.

  Selection of areas of intervention: The NRWSSP aims to improve WatSan delivery services throughout the country, reducing the existing gap regarding to access to improved water sources within different regions.

  On a sustained basis, some procedures are in place to prevent non-qualified districts from being receptors of the required resources, and a LGA has thus to fulfil a set of conditions to be qualified. It includes, among others, a recurrent contribution to the DWST; availability of qualified technical staff to manage projects implementation; preparation of a rolling District Water and Sanitation Plan (DWSP); and establishment of a District RWSS Fund.

  There are currently 91 qualified districts out of 115, which are expected to start receiving funds to implement WatSan projects. In this respect, the equitability of distribution of resources has been a matter of concern, and a more transparent mechanism for allocation of resources is in place. Since there are many districts with very low service coverage of safe and clean water, and because of the patchy availability of water resources within the country, the grants are to be allocated on the basis of the number of unserved people in a district, and the technology options to be implemented.

  At district level, nonetheless, since the MoW is not required to follow up how the resources are allocated, there is the risk to provide WatSan services to more able communities and not address equity issues, achieving the service coverage targets but threatening sustainability. It highlights again the need to monitor the progress of the programme, and its impact on equity of services.

  Finally, both communities and districts are required to contribute in cash to the estimated capital cost of the project, and it is true that community willingness to pay and district

financial availability is often much higher than expected. Nevertheless, it is believed that although their cash contribution should be clearly desirable, it can also represent a big burden for the poorest, given the costly implementation approach that the programme has adopted.

Gender and Poverty: It is common practice that women are mainly the ones who are carrying the burden of fetching water for the household, and yet they have little or no involvement in making decisions related to either water resources development or management, or the provision of water and sanitation services. There are clearly defined gaps in mainstreaming gender in the water sector, and the main areas for gender inclusion are to be focussed on fair representation of both women and men in water user committees; consultation of both women and men in selecting and managing rural water supply schemes, and empowerment of women to actively participate in decision making processes.

Likewise, there has been a historical failure to provide water supply and sanitation services to low income groups, denying them social equity considerations, and alternatives, such as the use of unprotected water sources, can present increased risks to health. Therefore, the Programme aims to first identify low income groups and then ensure the provision through inclusive services.

It is still early to prove whether this approach will tackle gender issues and poverty, but in any case, the NGOs are required to play an important role to empower women and ensure that the most vulnerable groups are effectively included.

- **Replicability.**

The Programme is based on the principle of replicability, since it aims to build up capacities and provide the appropriate resources to ensure that projects are to be replicated within the community and throughout the district, in order to achieve the targeted services coverage. As previously mentioned, since it is going to be implemented at national level, it is thus of key importance to guarantee a high functionality rate that allows replicability in other villages, preventing all the investment from failure.

At community level, it will be dependent on how efficient the beneficiaries manage the waterpoint. A representative water entity should be legally registered; and the revenue collection in place, ensuring at least ongoing operation and long-term maintenance costs.

At district level, a capable DWST is required to efficiently supervise and monitor both the ongoing and completed projects. Likewise, enabling the private sector to offer support services where these can be provided more effectively than through public utilities is

required, ensuring as well the accessibility of spare parts, tools, and materials for the operation and repair of WSS facilities.

At national level, the MoW has to ensure that all the partners are committed to the Programme, and that the strategy is bringing the expected results. Therefore, and efficient and effective MIS should be in place.

Finally, the WB has to continually monitor and evaluate (independently from the MoW) the progress of the Programme, and advocate for other approaches where necessary.

4.6. CASE STUDY: THE RWSSP IN MPWAPWA (DODOMA)

In 2001, the World Bank financed the Rural Water Supply and Sanitation Project, and it was first implemented in three districts: Rufiji, Mpwapwa and Kilosa. In particular in Mpwapwa, the specific goals to be achieved were to increase water supply coverage from 45.7% (in 2000) up to 85% by 2010. Nevertheless, it was not only to improve the service delivery, but to fully fulfil the criteria set by the NAWAPO; involving new partners, assuming new responsibilities, implementing a demand-driven and participatory approach …

The project was carried out in two different phases: ten villages during the first year (to provide service to about 29,411 people, equivalent to 11.5% of the district population); and 5 additional villages during the second year (about 20,275 people, 8% of the district population). All 15 projects have been completed and are properly managed by the communities, targeting a current service coverage in the district of 73.7% (and supplying safe water to 194,784 people out of 264,365 district population). Table 4.4 summarizes relevant data about the implementation of the RWSSP in Mpwapwa.

Table 4.4

Data of projects implemented by the World Bank in Mpwapwa [30]

Village	Population (Census 2002)	Population to be served	Year Construct	Num of DPs	% Function	% of full coverage met by functional DPs	Invest US$ x 1,000
Sazima	2,756	2,756	2003	3	100	100	48.3
Mtera	3,084	2,781	2003	5	100	90.2	58.4
Chipogoro	5,015	4,764	2003	8	100	95	54.7
Chaludewa	1,864	1,864	2003	4	100	100	58.6
Ikuyu	4,375	4,375	2003	9	44.4	100	125.4
Chamtumile	2,428	2,428	2003	10	70	100	---
Igoji II	2,591	2,500	2003	4	100	96.5	111.1
Mazae Nje	1,930	1,930	2003	6	66.7	100	79
Chiseyu	1,837	1,501	2004	4	100	81.7	60.8
Berege	4,512	4,512	2004	4	100	100	50.5
Lupeta	3,366	3,366	2005	9	100	100	70.7
Makutupa	1,849	1,849	2005	4	100	100	62.2
Pwaga	6,927	6,927	2005	9	100	100	427.4
Msagali	6,207	6,207	2005	9	100	100	97.1
Seluka	1,926	1,926	2005	5	100	100	70.7
Total WB	**50,667**	**49,686**		**93**	**89.2**	**98.1**	**1,374.9**

4.6.1. Major Findings

Mpwapwa District. Mpwapwa is divided into 3 divisions (Mpwapwa, Kibakwe and Rudi), 18 Wards, 84 Villages and 430 sub-villages.

With regard to its water resources, the district suffers from consistent scarcity and shortage of water, and it has become a major problem for both domestic and livestock watering. Where available, improved waterpoints are often highly congested, and people is used to fetch water from other sources, regardless its quality. Likewise, during the rainy season, water scarcity leads people to collect water from ponds which are unprotected and probably unsafe. Therefore, communities recognize the importance of having access to safe and reliable water sources.

District Water and Sanitation Team. The DWST has been established in Mpwapwa and is somehow assuming all its commitments, mainly the supervision of the RWSS projects.

In Mpwapwa, nonetheless, there is also WAMMA Team as an experienced and respected implementing agency. It is in charge of the implementation of some RWSS projects, and it thus has a strong relationship with both the DWD and the DWST.

With regard to the DWD, it is made up of 36 people (including one engineer, one assistant, and 10 water technicians); though it lacks means of transport (2 cars and 2 motorbikes to cover 84

[30] Data from the District Water Department, in Mpwapwa

villages), and office equipment (2 computers, no internet). It is fairly capable to efficiently undertake the supervision of the programme; but to ensure the long-term sustainability more resources are required and an appropriate monitoring system is of key importance (the DWE has to rely on the information reported from the communities). The current situation is unsustainable.

Private Sector. The private sector in Mpwapwa is starting to develop, and some of the communities have relied the day-to-day management of the waterpoint on private operators towards leasing via contract. The water entities (in Mpwapwa, VWC) are in charge to supervise their performance, and this approach is working and bringing the expected results, with a long-term impact on the sustainability of the facilities.

Community management. The major constraints regarding to the ability of the community to properly manage a waterpoint are: financial accountability, project management and ongoing operation and maintenance. The challenge in terms of sustainability is major repairs and replacements, since although the revenue collection is in place, they can currently only afford minor repairs.

At district level, the emphasis is on legally registering water user entities, as an effective way to empower the community and to increase their ownership over the WP. Nevertheless, the process is complex and excessively bureaucratic.

Sanitation and Hygiene promotion. Over the years, projects and resources have focused only on the water supply component, while sanitation and hygiene promotion have been sidelined. Moreover, where available, resources were spent on hardware construction of sanitation facilities, and not on hygiene promotion and behavioural change.

Therefore, an in accordance with the NAWAPO, a more integrated approach has been considered during the project implementation, and sanitation campaigns have been promoted to improve hygienic practices and to change behaviours. They have focussed on children, mainly through school activities (Child to Child, Sanitation Clubs in the school …); although significant work has also been done at community level to raise villagers' awareness.

Finally, and in addition to hygiene promotion, demonstration latrines have been constructed featuring alternatives for low-cost latrines and hand washing facilities.

Technology and Availability of spare parts. In Mpwapwa, typical sources of water are shallow wells, boreholes, gravity schemes, springs, and in some cases surface waters (streams and small dams), supplying water not only for human consumption but for livestock and irrigation uses.

Figure 4.4. Storage Water Tank (gravity system) in Mazae Nje (Mpwapwa).

Figure 4.5. Multiple communal waterpoint in Mazae Nje (Mpwapwa).

With regard to the availability of spare parts and qualified technicians, in Mpwapwa some communities have implemented preventive maintenance programmes, and there are also people trained at district level to carry out minor repairs. In contrast, there are no spare parts and replacements available within the district. Therefore, in case of complex repairs, communities must purchase them through regional centres (Dodoma or Morogoro).

The non-functionality rate of water schemes in Mpwapwa is currently around 17%.

Service Levels. As is shown in Table 4.4, and although the DWST is committed to the service levels set by the NAWAPO, in some cases they are unachievable (mainly due to water scarcity). Therefore, most of the DPs implemented are serving more than 250 people. With regard to the water quality, the first priority is to supply water, and WHO standards are thus not always achieved. Furthermore, basic treatment (chlorination) is required in some schemes.

4.7. KEY OBSERVATIONS

The World Bank has more than forty years of experience helping the Government of Tanzania to achieve sustainable economic growth and reduce poverty.

With regard to the water and sanitation sector, Tanzania faces a complex situation. Although the nation is endowed with sufficient freshwater resources to meet all of its current water needs, it lacks the appropriate policy framework to ensure their management on a sustained basis. Therefore, the Government of Tanzania (GoT) has adopted a road map for sector transformation in order to improve water resources governance and increase services delivery. In this context,

the WB seeks to play a significant advocacy role to influence the process, and to assist the development of the proper sector-related policy framework. Its approach is thus based on mutual and closely collaboration with the Government.

According to the NAWAPO, the water sector covers three different components, and the WB Programme has thus focused on these three areas of intervention: rural water supply and sanitation, urban water supply and sewerage, and water resources management. In particular, it has recently embarked on an ambitious challenge that aims to support the MoW (on behalf of the GoT) to achieve the national water sector targets.

With regard to the rural component, the WB has launched through the MoW the National Rural Water Supply and Sanitation Programme (NRWSSP), to enable the rural population to have access to reliable and sustainable water supply and sanitation services, and to tackle the existing inequity in service coverage. Nevertheless, the WB is not an implementing agency, and therefore it does not directly work with the recipient organisations. It relies on a strong partnership with the MoW, who is committed to the overall responsibility during the implementation of the programme. At the same time, and according to the principle of "decentralisation by devolution", the management and coordination of the day-to-day activities is to be undertaken by the LGAs, assisted and supported by the MoW, which should provide technical oversight as well as capacity building. Last but not least, it is a demand-driven approach, and thus community participation in all different stages should be guaranteed.

This approach is not without risk, and significant constraints threaten its success. At the community level, assistance and capacity building is needed to ensure the long-term functionality of the schemes, guarantee cost-recovery and carry out appropriate O&M. Likewise, districts lack resources (both human and equipment) and capabilities to supervise the ongoing and completed projects, and to assist communities to enable them to fulfil their commitment. Finally, an appropriate MIS at district level is still lacking, preventing the progress of the Programme from being monitored.

It is a mistake, nonetheless, to believe that it will not work. The NRWSSP is in place, and the challenge is not only to achieve the national targets but to ensure that it is done on a sustained basis. It is certainly the biggest opportunity to address (at national scale) issues such as water depletion, water scarcity, prevalence of water-related diseases … And there is thus no room for failure.

To conclude, the role of the WB should not be limited to routine supervisory inspections, since it is essential to ensure the efficiency and effectiveness of the programme. It is required to (i) thoroughly monitor the progress of the programme, (ii) assess the outputs, (iii) identify whether the implementation capacity of the partners has been over-estimated, and to (iv) evaluate the

performance of the partners involved at all levels. Where necessary, and working closely (but independently) with the MoW, it should detect inefficiencies and advocate for other approaches accordingly.

5. STRATEGY OF INGENIERÍA SIN FRONTERAS

5.1. TO EMPOWER THE COMMUNITY: THE APPROACH OF INGENIERÍA SIN FRONTERAS

Ingeniería Sin Fronteras - Engineering Without Borders – Uhandisi Usio Na Mipaka (ISF) is an International Non Profit Organisation which undertakes in Tanzania the duty of assisting local governments to improve the health status of population in Tanzania (in the selected areas of intervention) through water and sanitation programmes.

ISF started to work in Karatu District (Arusha Region), in the Mang'ola Valley in 1996, when a Catholic Mission requested them to construct a potable water supply scheme in the village of Mang'ola Barazani. Since then and up to date, it has extended its activities to provide WatSan services to other rural areas, not only in the same valley, but also in Kigoma Rural District (in 2003, Kigoma Region) and in Same District (in 2006, Kilimanjaro Region). It currently has 30 staff and an annual budget of roughly US$ 1 million.

The programme implemented by ISF is of interest because:

- it integrates water supply, sanitation and hygiene promotion, and focuses on both Technical (access to safe water) and Social Issues (hygiene promotion, District capacity building and empowerment of the community) to foster sustainability;
- it relies on own local rural teams (a different team is appointed for each programme) which adopting a supervisory role, are committed to lead the entire programme;
- its main partner is the local authority, in particular the District Water Department, although ISF's local teams also work closely with the beneficiaries in all different stages during project's implementation;
- it promotes both demand responding and community participation, from planning and execution up to the operation and maintenance, in order to ascertain what levels of service users are willing and able to pay for, and what mechanisms might ensure that poor people have affordable access to services; and
- its budget is established on a programme basis, and the level of intervention is thus defined depending on the financial resources available.

Therefore, these programmes are based on (i) health and hygiene promotion, on (ii) an improvement of the sanitation conditions, on (iii) capacity building at both local and district level, and on (iv) the construction and/or rehabilitation of water systems to improve the access to safe drinking water. It is a demand-responsive and participatory approach, where communities and District Councils are key stakeholders, although the leadership is handed over to ISF.

5.1.1. Description of the Programme

ISF is currently implementing three WatSan programmes in different rural areas across the country, as a clear response to the unbalanced situation that the country is tackling, where urban population is benefited the most by receiving the majority of the national water sector budget.

- Mang'ola Programme (in Karatu District) aimed to reduce a high percentage of prevalent water-related diseases in the area of intervention through the provision of WatSan services; focusing on community participation and governance improvement. It is now implementing the last phase of the project, and considerable debate on sustainability issues has emerged in order to develop an effective exit strategy.
- According to the Government, Kigoma is the second poorest region in Tanzania. ISF started working there in 2003 as a request from another INGO (Médecins Sans Frontières), and the programme is currently consolidating work on WSS interventions in 18 different villages. Since the beginning, it was based on capacity building of local institutions and community participation, although the need to serve a high number of beneficiaries combined with very limited resources available has lead to consider goals less ambitious than in other programmes.
- Same District proved to be a high vulnerable area during the drought suffered in Tanzania in the last years. In Same, ISF started an ambitious programme based on an innovative service delivery partnership between the District Council, Local NGOs and the community; supported by technical Spanish Universities. Likewise, it aimed to integrate not only WatSan services and hygiene promotion, but also water resources management.

At the same time, ISF has been recently established in Dar es Salaam, aiming to develop a stronger and more strategic partnership with the Ministry of Water (MoW). In the course of having implemented different WatSan programmes and more than 10 years of experience in the country, ISF aspires to play a more advocacy role, bringing their practical experience at national level to influence reform processes on technical-related issues, including:

- the selection and standardization of key indicators to measure the performance and sustainability of a WatSan project;
- the implementation at local level of the Management Information System (MIS) embodied by the National Water Sector Development Programme; and
- effective and sustained interventions regarding to sanitation and hygiene promotion within the communities.

The main outputs of the projects funded by ISF[31] are detailed in the table below (more detailed data in Annex C), and the villages of intervention are depicted graphically in Figure 5.1., indicating which DPs are already implemented or are under construction [32].

Table 5.1

Data of projects implemented by 'Ingeniería Sin Fronteras'

Region	District	Num of Villages	Population Census 2002 [33]	Total DPs Implement.	Total DPs to be Developed	Population to be Served [33]	Investment € x 1,000
Arusha	Karatu	5	21.3	79	0	20.6	1,887
Kigoma	Kigoma Rural	18	129.6	115	105	97.8	2,330
Kilimanjaro	Same	3 + 10-15	≈ 42	0	17	≈ 42	3,588.5
Total ISF		**26 + 10-15**	**192.9**	**194**	**122**	**160.4**	**7,805.5**

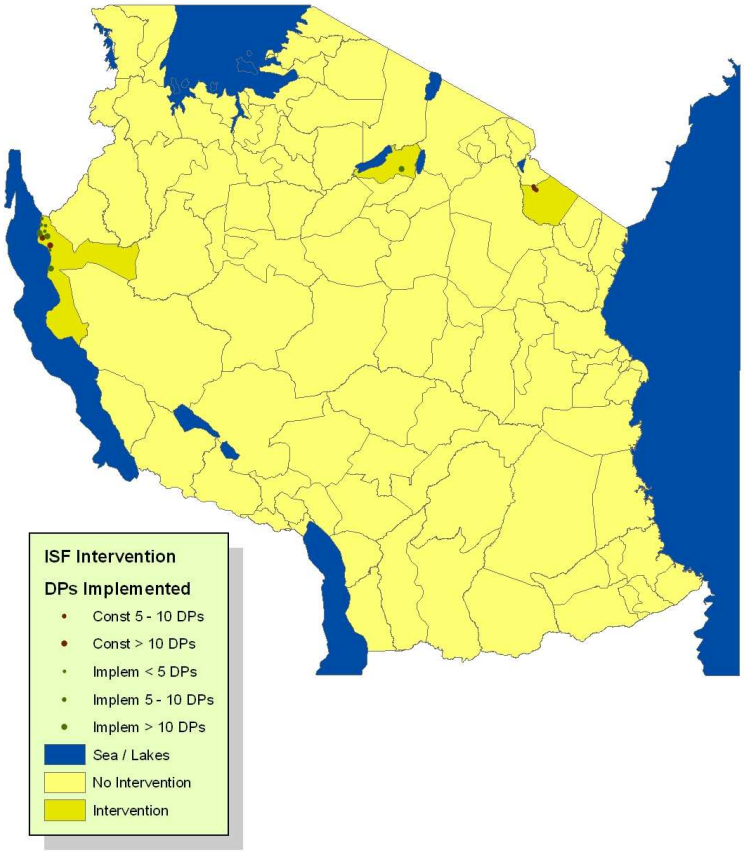

Figure 5.1. Intervention of Ingeniería Sin Fronteras in Tanzania.

[31] Data from some projects is not available
[32] Data of some villages is not available, and thus some villages are not shown in the map
[33] Population / Beneficiaries x 1,000

5.2. STRATEGIC CONTEXT AND RATIONALE

5.2.1. Rationale for Ingeniería Sin Fronteras Involvement

Tanzania is facing significant challenges in the water sector, and new policies have been recently developed to define the appropriate strategy in order to achieve ambitious national targets set in both MKUKUTA and the Millennium Development Goals. Therefore, NAWAPO was formulated in 2002, MKUKUTA identified water sector as a priority in 2005; and a comprehensive Programme (WSDP) has been developed in 2007 by the Government to put water-related policy in a functional framework.

Likewise, regarding the UN Millennium Declaration, the goal is to "halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation", establishing an overall target which MKUKUTA clearly specifies.

In essence, the main problems that the sector is tackling are (ISF – Tanzania, 2006):

- Lack of safe water for human consumption. Water supply remains vital in Tanzania, and only 55% of the rural population has access to improved water sources. As a result, in many villages, there is only access to highly contaminated sources, or safe sources are situated very far (huge time must be then inverted to fetch water).
- Lack of maintenance of existing drinking water systems in some villages (pumps, gravity, and wells).
- When safe water is accessible, a deficient use of it because of a poor "water use" education results in water borne diseases, which are the third mortality cause among the under five children.
- Poor hygienic conditions, and either lack of maintenance of existing systems of excreta disposal (latrines) or absence of them.
- Poor hygienic practices at the household level.

Similarly, the Government is undertaken significant reforms based on the principle of "Decentralisation by Devolution", and roles and responsibilities in the water sector have been modified. It has brought a period of instability, since neither communities nor authorities at district and basin level have enough capacities and resources to lead WatSan projects, to assume real protagonist in the development of communities, and to foster initiatives that could improve the current situation. The main difficulties identified regarding to governance are:

- Lack of capabilities and organization at community level to deal with their WatSan needs.

- Lack of capabilities and resources (funds, human, material) within local authorities to carry out their commitment.
- Deficient promotion of IWRM.

In the light of all of these limitations, ISF has needed to change their country strategy, defining efficient and sustained mechanisms to collaborate with the Government (through its Districts councils) to develop WSS programmes. ISF is endeavoured to fulfil the sector policies, thus focussing its effort on both water supply and sanitation delivery services, and on building up capacities of the recipient organizations as an effective response to the government strategy of decentralisation.

Equally important, there has been considerable debate around issues of sustainability, and to clarify an exit strategy once a project is completed is thus required, in order to hand over the services to the communities on a sustained basis.

Finally, ISF – Tanzania is rapidly growing, moving from an annual budget of US$ 100,000 in 2002 up to US$ 1 million last year. It is a process clearly driven by the need to expand their activities and achieve a greater impact; and the key aspect is thus to successfully deal with all the internal changes that are currently in place within the organization.

5.2.2. Lessons learned from the past

ISF has now more than 10 years of experience in Tanzania, and although it is still early to confirm the effectiveness of their interventions (any project has been completed up to date), a broad range of lessons have been learned, adopting a learning-based approach to continuously improve their strategy. In particular, ISF has realized that:

- In rural areas, each community has their particular features, and thus a participatory approach has to allow ISF to clearly identify the most appropriate strategy (do not rely on universal or systematic approaches) to ensure that the community is empowered and that the vulnerable groups are included in the process.
- ISF adopts a leadership role during their interventions, and its approach to strengthen local government partnerships at district level has to improve and be modified accordingly. There is a need to build up capacities and enable local authorities to assume their commitment with regard to water and sanitation delivery services, if the replicability of the project is to be achieved.
- Similarly, reliable partnerships with Local NGOs and private sector are also needed to be developed. In Tanzania there are few organizations capable of implementing water schemes or sanitation infrastructures, and capacity building is essential since they will play a key role in the current policy context.

- The sector is unstable and it is continually being modified at national level. To create strong links with the MoW is crucial if ISF aims to play a more advocacy role and influence water sector reform processes.
- A comprehensive evaluation of the overall impact after project completion is the basis in a learning-based approach, and an efficient monitoring system is thus needed to be implemented (new tools are available, e.g. in Same GIS has proved to be helpful to detect low coverage areas).
- ISF is aware of the importance to integrate water resources management in their strategy.
- Regarding ISF internal organization, frequent rotation of the expatriate staff undermines stability and hampers the following up of the project. Building up capacities of national staff is essential if continuous improvement of ISF methodology is to be achieved.

5.3. OBJECTIVES AND STRATEGIC AIMS [34]

The overall mandate of ISF in Tanzania is to improve the health by reducing the significant impact that water-related diseases are causing among rural population, through water and sanitation services delivery and hygiene promotion. In essence, ISF seeks to fulfil two main objectives:

- To put the knowledge at the service of human needs, by leading projects where innovative and appropriate technologies are implemented in poor rural settlements. In particular, ISF is currently working in three different areas: Water Supply and Infrastructures, Agriculture and Information, and Communication Technologies.
- To advocate in favour of a universal access to basic needs (water, food, health, education …), by giving courses in Spanish universities; organizing events -such as exhibitions- to inform and to raise public awareness; and participating in various national committees to influence reform processes, like the Cooperation Council (consulting body in WSS-related issues of The Ministry of Foreign Affairs and Cooperation in Spain).

Clearly, it is of key importance to monitor and evaluate the overall impact of any intervention, and therefore a set of functional indicators related to the programme objectives should be in place. As previously mentioned, although ISF is advocating at national level to standardize a group of common indicators within the water sector; it has also developed a monitoring matrix to be able to measure and follow up the performance of WatSan interventions in the meantime.

[34] From ***ISF: Operational Manual***, ISF Tanzania (2007, first draft)

5.3.1. Strategic Aims

The intervention strategy envisages four expected objectives, and based on a participatory approach, it focuses on both strengthening local authorities and community empowerment in all phases of the project; as the only way to guarantee sustainable interventions.

To enhance the capabilities of LGAs to assist communities and organisations dealing with WatSan projects

ISF aims to promote a strong partnership at district level, and build up capacities to improve governance. Local and District authorities with its relevant departments (at least Water, Health and Education) will be involved in all the activities during project implementation, from the beginning of the action, and will be trained on issues such as PHAST, appropriate technology, and WatSan project designing, planning, monitoring and assessment. Equally important, the DWD has to be capable to implement an appropriate report system to follow up the functionality of all different schemes constructed within the District, and set the means to efficiently assist communities. In particular, two main goals are to increase the current lack of proper operation and maintenance (O&M) practices of the water facilities, and to improve the reliability of an appropriate spare parts supply chain, both needed if the system is to be sustained.

Likewise, to strengthen the relationship between community management entities and the DWD is required if effective collaboration between these two key stakeholders is intended to be achieved. Nevertheless, a previous step should be the creation, at local level, of representative and inclusive entities (women and vulnerable groups have to be involved); and to improve, at district level, transparency in decision-making processes and its financial accountability.

ISF intervention will include:

- enhancement of District capacities for an effective monitoring of water entities at village level;
- implementation of a Management Information System at district level, incorporating new tools and procedures to facilitate decision-making processes and resources allocation, in particular a Geographical Information System (GIS) with relevant data to follow up the WatSan services coverage within the District (water point mapping, health indicators, and water resources); and
- access to water resources information at district and basin level, with the incorporation of new tools to promote effective Integrated Water Resources Management (IWRM) in the area.

Set of indicators

- At least two technicians of DWD are formed in Water Act, Community based Water Users Groups, and district responsibilities issues by the end of the project.
- At least two technicians in DWD are formed in hydrogeological monitoring and source protection concepts.
- The DWD have the adequate resources to carry out its commitment (staff, vehicles, computers, level, water analysis equipment, GPS …) and manages them properly after project completion.
- The DWD has developed with Basin Office assistance an strategic plan to increase sustainable access to WSS within the district by the end of the project.
- A monitoring plan has been elaborated in the DWD for the regular follow-up of water systems.
- A water resources assessment study (both surface and groundwater) is available for the targeted areas, including aquifers recharge models and other relevant information for water resources planning, by the third year of the project.
- Water sources protection is assumed among WUA's duties, and IWRM concepts are included in the relevant by-laws.

To increase access to safe, affordable and sustained water service for the population in the area of intervention

As previously outlined, roughly 50% of the total rural population has access to improved water sources, and building infrastructures to provide safe water is thus essential.

Nevertheless, and prior to any intervention, ISF has recently started to address issues of water depletion, and a water resource assessment should thus be required. A good understanding and knowledge about natural water resources and its behaviour in the relevant area is necessary to select the water sources that will be utilized in design; and then propose the different alternatives to be developed (boreholes, shallow wells, spring development, rain harvesting …). Similarly, hydraulic parameters regarding quantity, quality and reliability of water should also be measured to choose the suitable location and design of the water supply systems. In any case, the water resources studies should observe as well the possible different uses of water in the area (drinking, washing, cooking, farming, cattle, fishing, industrial, cultural uses, etc), to prevent the programmed actuations from interfering with the population needs. The NAWAPO (2002) establishes that the new created Basin Water Offices are the entities in charge of the water resources monitoring, and it is thus of key importance to create linkages at basin level in

the areas of intervention. At the same time, not only the DWD should be involved in the water resources study (knowledge of water resources is essential for appropriate management and planning); but ISF also aims to engage Tanzanian universities, ministries or regional water offices, to have their support, to share information and to transmit this kind of knowledge.

The next stage, once the water source has been selected, is to design different viable alternatives, which will be discussed within the village to choose the most appropriate, in terms of service level, skills needed to operate and maintain the scheme, and financial affordability. A key aspect is to ensure the ownership sense of the community over the waterpoint, since it is needed not only for the ongoing maintenance, but to environmentally protect the water source area from depletion and pollution.

Finally, regarding to service levels, ISF is clearly endeavoured to perform the targets set by the NAWAPO, since it is believed that sustained access to safe water is needed if poverty is to be eradicated. For instance, ISF states that one of the main problems affecting the daily life of rural population is the amount of time that women and children invert to collect water, preventing them from carrying out other more fruitful tasks, and hampering women to improve their position in the family and in the society. Nevertheless, it is also true that depending on the context, these official service levels are unachievable, and other more realistic targets are thus considered (e.g. in Jobaj (Mang'ola Valley) one DP is serving more than 250 people, since only one perforation -four attempts were done- brought a reliable water source).

Set of indicators

- 30% reduction of morbidity due to water-born diseases in the area 2 years after project completion
- At least 80% of targeted population is having access to reliable water service 2 years after project completion.
- At least 80% of the population use constructed water supply and water consumption has been doubled after project completion.
- Each public water point (2 taps) supply good quality water (Tanzanian standard) to less than 400 people (600 for handpumps) within 20 minutes as a maximum after project completion.
- Capacity of system from source to public water points ensures 25 l/p for 100% of total population after 20 years (growth rate estimation) after project completion.
- Water sources are properly protected and in a safe environment by the end of the project.

To improve hygienic practices and the management of potable water at household level

Access to improved water sources without sanitation infrastructures and hygiene promotion has little impact on the life standard of beneficiaries. Similarly, safe water at source does not guarantee potable drinking water if it deteriorates before final consumption (by poor collection, transportation and handling practices). ISF thus needs to integrate into water supply projects an appropriate program of sanitation and hygiene promotion among the population (both education and hygienic practices), to effectively ensure that recipient communities are benefited by the technical implementation of a water supply scheme.

A participatory approach in hygiene promotion is crucial if the design is to meet beneficiaries' needs, and in ISF programmes it is based on the Participatory Hygiene and Sanitation Transformation (PHAST) methodology, adapted to local circumstances (the National Water Sector Development Strategy also promotes this methodology). At the same time, other additional activities are also integrated, such as dramatic performances, posters, and Child to Child activities for hygiene promotion in schools, aiming to empower youth to become agents of change in their families and communities with respect to health and hygiene behaviours.

Equally important, hygiene education is an integral part of ISF hydro-sanitary projects, and during the campaigns, social marketing techniques will be used to improve the effectiveness of the message transmission (demonstrative latrines in public places, school activities, house by house campaign …).

Set of indicators

- A least 80% of targeted population is having access to basic sanitation services 2 years after activities completion
- At least 40% of population have improved management of children's stools, hand-washing practices and water management at household level after project completion.
- At least 80% of primary school-going children have attended hygiene promotion activities during the project period.
- At least 4 masons in each village trained for construction of several option of latrine after second year of project.
- The hospital, markets, primary and secondary schools have enough public sanitation blocks (max. 50 users/latrine) by the end of the project.
- At least 60% of potential users (children, patients, vendors ...) utilize public sanitation blocks (in schools, hospitals, markets ...) and at least 25% of families have improved and make use of their private latrines after project completion.

- At least 70% of beneficiaries' demands for latrines improvement have been attended during the project.

To enhance the capabilities of the communities to manage and maintain their respective water systems

In the current policy context of Tanzania, "decentralisation by devolution" relies on communities the long-term sustainability of water schemes, so strengthening the management capability of water local management entities is crucial.

From the early stages of the program, ISF will focus on capacity building at village level, collaborating with them in the identification of needs, project formulation and budget, definition of responsibilities and obligations of users, organization management, book keeping, accounting, responsibilities, and relation between committees, District and Basins organs, etc. This approach includes, among others:

- **Demand responsive**. The community identifies the needs in the water and sanitation sector, balancing levels of provision, ability to pay, and mechanisms to ensure that the poor and vulnerable groups have affordable access to services.
- **Community Management/Participation**. In brief, emphasis is placed on empowering local people to assume an active role in the whole project cycle from planning and execution (e.g. participatory village mapping to allocate waterpoints within the village, analysis of alternatives, final selection of the water scheme) up to the operation and maintenance. In terms of costs sharing, community contribution (cash, local materials and unskilled workers) during the implementation stage is also required (in accordance with the NAWAPO), as an effective measure to increase the sense of ownership over the water facility.

Figure 5.2. Unskilled work (Mang'ola Valley).

Figure 5.3. Local material for latrine construction (Mang'ola Valley).

- **Capacity Building.** The implementation process focuses on the community, developing the abilities required to assume its commitment with regard to the water supply service. Therefore, water entities are to be trained on operation, maintenance and management, while the Village Health Committee is trained on hygiene promotion. Similarly, awareness of water policy and related rights and obligations needs to be increased in the communities, to promote community mobilization with a rights-based approach.

Finally, once the project is completed, a sustained and successful exit strategy entails a period of supervision by ISF before handing over definitively the management of the service to the water entities, and the responsibility of supervision and technical assistance to the District Water Department.

Set of indicators

- Cost recovery system is established and functioning to ensure sound financial management and full cost recovery by the end of the project.
- Less than 25% of water rate unpaid after project completion.
- Gender equity in water & sanitation organisations and in decision making during the project period.
- At least 30% of women have increased their participation in productive activities 2 years after project completion
- Roles, tasks of key players, and procedures to solve problems and disputes well established by the end of the project.
- Community assess, discuss and select, with a representative participation of vulnerable groups, a suitable design among different choices during the first year of project
- Water Users Associations have been democratically constituted, trained and registered in each village by the end of the project.
- Routine and preventive maintenance and repairs undertaken satisfactorily on water systems by the end of the project.
- National and international potential donors/partners are identified, and well documented technical proposals elaborated by the end of the project.

5.4. INGENIERÍA SIN FRONTERAS AND ITS PARTNERS: ROLES AND RESPONSIBILITIES

ISF focuses their strategy on strong local teams to lead the implementation of their projects. Nevertheless, according to sustainability issues and within the framework of the NAWAPO, ISF is moving to build up capacities at district level to promote a partnership able to assume more responsibilities during the implementation and day-to-day activities related to the project.

In other words, ISF approach is based on local teams which are in charge of developing strong partnerships with District Councils and its relevant departments. At the same time, it directly works with beneficiaries and recipient water entities, as an efficient way to ensure the long-term sustainability of the services provided, since communities are committed to assume at least the ongoing operation and maintenance of the scheme after project completion.

At national level, ISF relies on a coordination team located in Dar es Salaam to influence, where necessary, sector-related policy reform processes, aiming to strengthen strategic linkages with the MoW.

Therefore, ISF collaborates with different key stakeholders, and prior to every project, a Memorandum of Understanding should be agreed between them, establishing their main responsibilities and contributions, which are briefly outlined below.

Ingeniería Sin Fronteras

ISF organization in Tanzania is based (as previously mentioned) on rural and inter-disciplinary teams (at least one field coordinator, one engineer, one administrator, one logistician and two community development officers), to directly work in the implementation of the programme, and on one additional team in charge of the coordination at national level located in Dar es Salaam.

These teams rely on a mixture of expatriates and experienced local people, offering numerous advantages. The focus is on continuously building up capacities of national staff, which not only are familiar with the culture of the beneficiary population (better understanding of local priorities and preferences for WSS), but also provides certain stability within the team. In fact, a significant weakness is that expatriate staff's continuity is still challenging, and their rotation seriously hampers the monitoring of the project and the possibility to strengthen linkages with key stakeholders.

ISF clearly assumes the leadership in all different stages of the project, and this is certainly a risky approach. In essence, sustainability depends on the capacities of their local partners once

the project is completed, and ISF should thus play a more supervisory role in future, providing financial and technical support, rather than directly implementing the day-to-day activities.

ISF responsibilities includes, among others, to:

- Elaborate the overall framework of the project in close coordination with main partners and local authorities.
- Support the project with suitable financial and material resources, with a contribution up to 90% of the total capital cost (supplying tools and equipments to build the water system, such as pipes and fittings, engine and pump, cement, iron bars, iron sheets; and providing means to transport them to the construction site).
- Conduct, together with the selected partners (local authorities or service providers), the initial participatory workshops and community mobilisation, and organize the collection of relevant hygiene, water and sanitation data prior to project implementation.
- Develop, in collaboration of the DWD, a water resource assessment in order to address issues of water depletion, and promote water sources protection to prevent them from being polluted.
- Provide technical support and supervision during planning, implementing (design and construction or rehabilitation) and ongoing operation and maintenance for different water supply systems and sanitation infrastructures.
- Negotiate with potential providers to supply materials (assuring affordable price and quality) for the technical interventions, which cannot be provided by communities or the DWD.
- Organize and supervise sanitation and hygiene promotion campaigns, such as PHAST and Child to Child.
- Facilitate appropriate training to the Health committee and village health workers to acquire professional skills to work efficiently (mainly PHAST and Child to Child activities). Similarly, enable Health workers to perform a promotion campaign to educate people within the community on basic health issues.
- Conduct and provide technical (maintenance) and managerial training at both District (DWD) and local (water management entities) level, to provide knowledge and ability on how better the system should be run and managed efficiently.
- Develop the implementation of a bottom-up reporting system, from the water management entities towards the supporting authorities (e.g. the DWD).

- Support and assist communities in all legal procedures (setting-up and register of the new water management entities, land and water rights).
- To enable and facilitate the community the implementation of a cost recovery system, focusing on financial accountancy, and a transparent management of the collected funds.
- To increase community awareness of water sector national policies, promoting the National Water Policy and the water using and owning rights.

ISF approach is thus of interest because it is somehow committed to the (limited) resources available at district level, building up their capacities, without creating additional structures (see WA approach). However, although it is still early to prove if it is to be sustained, it is uncertain in terms of replicability, because of the strong leadership role ISF is required to play, and since not all the districts are equally prepared to undertake their responsibilities.

Local Government Authority

ISF official partner is the District Government and its related departments (Water, Health, Community Development and Education), and the main goal is thus to strengthen their capabilities to enable them to fulfil their commitment, since district authorities will be the ultimate responsible for the supervision of the O&M of the water schemes.

Therefore, an important work is being done with the district technicians, engaging them to actively participate in all the phases of the programme, and supported by ISF, to lead the technical implementation of the project through community participation.

At a practical level, the strategy is based on jointly (ISF and District) establishing a work schedule considering the main activities during the implementation of the project, following it up on a weekly and monthly basis. Similarly, an annual budget is agreed, appointing all the resources required to carry out the planned schedule. In this respect, to incorporate suitable procedures to facilitate effective monitoring and evaluating is essential to oversee the performance of every partner; and ISF should develop appropriate reporting mechanisms if the projects are to be efficient.

The **District Executive Director** is expected to promote, coordinate, and support the entire programme, including it in the framework of the District development plan and guaranteeing that national sector-related policies are enforced. In brief, it has to be involved in the preparation and execution of the programme, assigning the necessary resources and facilitating the participation of all the departments required. In particular, it is committed to:

- conduct regular evaluation meetings with all key partners concerning the project;

- include the programme -and its sustainability- in the plans and budget of the District, assigning appropriate resources. In particular, qualified personnel of the relevant departments (Water, Community Development, Health and Education) should be selected and appointed where necessary;
- pay on time allowances for activities (supervision, mobilization, etc) to all collaborating District members; and
- provide guidance to the local village authorities to cooperate in the implementation of the programme, and act as mediator to solve possible conflicts at community level.

District Water Department should take part in the trainings, mobilize communities, support them and provide technical supervision during the implementation and after project completion. If required, technicians with full dedication should be appointed, assuring that all the responsibilities are efficiently executed. It is endeavoured to:

- include the project into its own plans and budget and fully participate in it;
- look after the sustainability of the project considering, where necessary, additional budget in the long-term plans of the DWD;
- lead the implementation of the project through community participation, with the support of ISF;
- ensure that national targets are met with the design of the water scheme. In particular, great effort should be done to provide safe water in terms of quality (DWD is responsible to check if water quality at source fulfils the Tanzanian standards), and to assist communities in water sources protection.
- raise community awareness of the need to legally register water management entities, and if required, support and assist them in collaboration with ISF, in all legal procedures;
- monitor and evaluate the proper running and operation of the water schemes, using the reliable information reported from the communities;

The **District Health Department** is responsible for conducting regular visits to supervise the actions related to sanitation; collect and analyze epidemiology information; promote hygiene and sanitation; and to motivate the staff of the health dispensaries to foster their participation. In brief, it is expected to:

- collect health data and facilitate relevance reports;
- appoint health staff of the dispensaries to support the program; and to

- collaborate with ISF in the organization, implementation and supervision of the Child to Child campaign, the PHAST programme an other hygiene promotion activities.

Community

As previously described, all the project design is based on a demand responsive approach, and involves the beneficiaries in all stages of the programme, ensuring that the water system is adapted to their management capacities, and that a certain ownership feeling is spread among the community,

One of the main challenges of the project is thus to build up capacities at village level, since beneficiaries are committed to own and effectively manage the water schemes once the project is completed. Firstly, the community must decide which is the most suitable management alternative, and then undertake the process of registration as a legal body. In addition, it has to become an inclusive (both women and vulnerable groups should be involved), cost-effective (collect enough funds to ensure long-term system extensions, reparations and replacements) organisation. Last but not least, being trained on the management and maintenance of the water systems is required, to ensure the functionality of the system in the future.

Above all, the community is required to:

- create, organize and legally register an appropriate water management entity, which should be inclusive and cost-effective. This entity is responsible to deal at least with the proper operation and maintenance of the WatSan facilities on behalf the community;
- contribute up to 10% to the capital cost of the programme with cash, local materials and unskilled workers.
- cooperate during the entire project: implementation, management, supervision and operation of the water system;
- cooperate and effectively involve the community in all the activities related to sanitation and hygiene promotion (mainly Child to Child campaign and PHAST programme);
- evaluate, monitor and report the progress of the water system; and to
- ensure ongoing operation and maintenance, preventing the services from ceasing once the project is completed and inaugurated.

5.5. SUSTAINABILITY APPROACH

ISF relies on strengthening capacities at the community based management level and on reinforcing supervisory and service delivery organs (District and Basin) as the most efficient strategy to guarantee the sustainability of the project. Nevertheless, it is only ten years since it

started implementing WatSan projects in Tanzania, and it is thus still early to say whether the schemes will prove to be sustained and this approach effective.

In this respect, ISF is aware of the problem Tanzania (and many African countries) is currently tackling regarding the low functionality rate of the water schemes implemented in the past, and significant debate is in place to identify on a sustained basis an exit strategy in Mang'ola. As a minimum, ISF estimates that the sustainability of the programme is achieved by:

- (at community level), the full participation of the beneficiaries in the design of the actions, the selection of the level of service, and the legal constitution of democratic and trained water entities for the local management of the services;
- (at the district level), the commitment of qualified and experienced technicians to the project. Likewise, an efficient reporting and monitoring system ensures appropriate supervision of existing water and sanitation services; and thus the establishment of new tools (such as GIS) should allow the District to support most needed communities in the future; and
- (at basin level), the execution of a comprehensive water resources study to allow both District and Basin Authorities to implement effective measures towards IWRM at local level, through the establishment of by-laws adapted to the real environmental context of each community.

5.5.1. The role of Ingeniería Sin Fronteras and their partners

As previously mentioned, ISF approach focuses on three different key actors (ISF, district authorities and communities) to promote long-term functionality of the services provided, and it will be clearly dependent on the existent collaboration between them, during the project implementation and after its completion.

The first priority is to build up strong national ISF teams, since their role is crucial as the main contact point between communities and government; and since they are committed to lead and follow up the entire programme. Although great effort is being done, it progresses slowly.

As a clear response to the current policy context, nonetheless, the emphasis is moving to strengthen capabilities within district authorities, to enable scaling-up and ensure replicability throughout the district. At this point, the main drawback needed to overcome is the lack of resources available (mainly qualified personnel) to implement new projects independently, without the supervision of external donors (ISF). Equally important, it is believed that the involvement of other service providers (Local NGOs and the private sector) should be promoted, since they are likely to play a key role, as suppliers of different services in case

specific skills or relevant experience are required during the project implementation. In this respect, nonetheless, the current situation is far from being encouraging, since few organisations are currently capable to undertake this commitment.

At the same time, the community plays a central role, and ISF strategy is based on enduring and direct cooperation between local ISF teams and beneficiaries. It is, undoubtedly, the major strength of this approach, since community is empowered from the beginning of the project through the promotion of their full participation in all the activities. It is still challenging, since it is clearly not only to ensure long-term O&M, but also to create and establish transparent, democratic, inclusive and cost-effective entities capable to manage the facility and to negotiate where necessary with the local authorities.

In respect of the creation of new water entities, ISF (in collaboration with the DWD) is assisting communities to inform them about the diverse management alternatives that NAWAPO proposes, and only when the community selects the most suitable option, the process to legally register it takes place. Although shifting from the existing Village Water Committees to these new water entities is seen as an opportunity to create more transparent and representative organizations, the process is resulting to be complex, and thus more flexibility should be advocated if the communities are expected to undertake it independently. Certainly, one significant outcome of ISF projects is the number of new water management entities legally registered (Table 5.2).

Table 5.2

Management Alternatives in ISF projects

District	Village	Total of DPs [35]	VWC	Registered		In Progress		Others
				WUG	WUA	WUG	WUA	
Karatu	Mang'ola Barazani	25		25			1	
	Maleckchand	13		13			1	
	Qangded	24		24			3	
	Jobaj	1		1			1	
	Mbuga Nyekundu	16		16	1			
	Total	**79**		**79**	**1**		**7**	**1**
Kigoma	Simbo	(20)				20	1	
	Bubango	18		18	1			
	Kagunga							
	Kaseke							
	Mwamgongo	0						
	Kalinzi							
	Kizenga	20				20	1	
	Kidawhe	30				30	1	
	Mkongoro Group							
	Mtanga	10				10	1	
	Sunuka	20				20	1	
	Kilembela	5		5	1			
	Chankele	12		12	1			
	Chankabwimba	(15)				15	1	
	Mahembe	(15)				15	1	
	Kamara	(15)				15	1	
	Kasuku	(15)				15	1	
	Msimba	(25)				25	1	
	Total	**115 + (105)**		**35**	**3**	**185**	**10**	
Same	Njoro	(6)				6	1	
	Ischinde	(11)				11	1	
	Vumari							
	10 – 15 Addit Vill							
	Total	**(21)**				**17**	**2**	
Total ISF		**194 + (126)**		**114**	**1**	**202**	**1**	**1**

VWC: Village Water Committee; WUG: Water User Group; WUA: Water User Association.

In brief, Table 5.2 clearly shows that ISF is aware of the importance to involve the community in the planning processes and to enhance their sense of ownership, promoting and supporting the registration of water entities as legal bodies.

[35] In brackets, DPs to be developed

5.5.2. Measuring sustainability

- **Effectiveness**.

  Table 5.3 details the functionality of all different ISF interventions (more specific data is detailed in Annex C).

Table 5.3
Sustainability of ISF Interventions

Region	District	Num of Villages	Total	Functional		No functional		Under Const
			DPs	DPs	%[36]	DPs	%[36]	DPs
Arusha	Karatu	5	79	70	88.6	9	11.4	
Kigoma	Kigoma Rural	18	220	80	69.6	35	30.4	105
Kilimanjaro	Same	3 + 10-15	21					17
Total ISF		**26 + 10-15**	**316**	**150**	**77.3**	**44**	**22.7**	**122**

In brief, Table 5.3 shows that ISF has supported the installation or rehabilitation of 194 water points (150 functional DPs and 44 non-functional DPs) in 12 villages, serving a combined population of 62,195. At the same time, there are 122 further water points under construction in 8 additional villages (to serve a combined population of 38,119). There is no data available from 6 villages.

In these 12 villages:

- there is full system functionality in 4 villages (population 13,360), with 54 functioning drinking water points; and
- there is partial functionality in 8 villages (population 48,835), with 96 functional DPs and 44 not functional DPs.
- ISF-supported schemes have an overall functionality rate of 77.3%.

The following map shows the overall functionality rate in the districts of intervention.

[36] Percentages over the total DPs implemented (without considering DPs under construction)

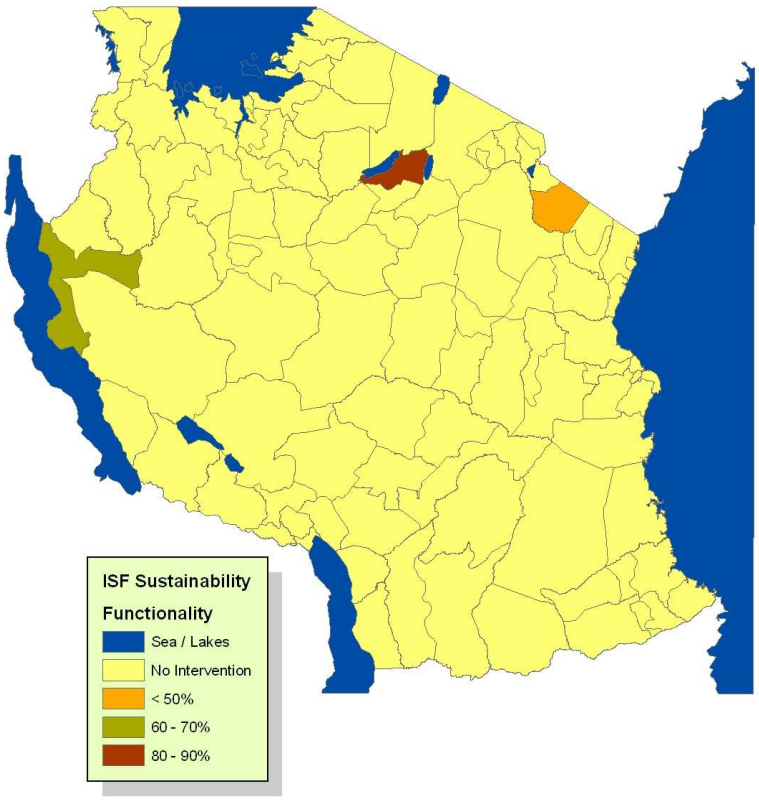

Figure 5.4. Sustainability of ISF Interventions.

According to this data, although it seems to verify that the overall functionality rate is high, it is too early to confirm whether ISF interventions will prove to be sustained in the long-term.

In this respect, there are indicators that intuitively show that a high percentage of the schemes will still be operating in future, such as the good progress regarding to the registration process of new water management entities; the increasing sense of ownership within the community over the DP, the financial accountability achieved in most cases once the revenue collection is in place; villagers' willingness to pay for water …

In contrast, there are also key aspects which can threaten the long-term functionality of the schemes, and the main priority should thus be to amend them and to effectively overcome:

- availability of qualified technicians at district level to carry out specific maintenance and complex repairs;
- availability (at district level) of replacements, spare parts, tools, and materials for the operation and repair of WSS facilities;

- implementation of preventive maintenance schedules and leak detection programmes at village level; and
- conflicts of governance between Village Government and water user entities.

- **Efficiency.**

  If efficiency is ascertained by the outputs produced per unit of resources (financial, human and environmental), the main aspect needed to be carefully analysed is the overall investment required to produce one waterpoint.

  It has previously been clarified that local and District institutions capable to carry out WSS projects independently is the basis of ISF approach, and directly compare the resources used by ISF in their projects with those available at district level is thus required to determine, in terms of replicability, if this strategy is to be efficient. In other words, ISF should thoroughly evaluate whether the resources invested (particularly human resources) are both justified and optimized, and somehow determine whether their interventions prove to be efficient.

  In any case, nonetheless, despite the favourable tendency prevailing at district level to collaborate, and assuming that its personnel is qualified (condition which not always is met), it is also true that their limited resources clearly threaten the long-term sustainability, if they are intended to assume the lead role in WSS projects and to work independently. In respect of this risky situation, and to prevent it from getting worse, transferring more resources to LGAs should be advocated at national level. At the same time, more effort should also be done to enable service providers (mainly private sector) to offer support services where these can be provided more effectively than through public utilities; and build up their capacities is thus recommended.

  Equally important, dealing with their rapidly growing internal organization is another challenge ISF needs to tackle. It is gradually expanding their interventions, and a new coordination team has been recently established in Dar es Salaam. Apparently, it seems to be a good opportunity for enhancing the collaboration between the different ISF programmes and for strengthening linkages at national level. Beyond this, nonetheless, the operational advantages that intuitively will bring this new structure should lead to clear benefits/outputs in the water sector, avoiding (inefficient) over-investments in human resources.

  With regard to the service levels, and as previously stated, ISF needs to balance the targets set by the government against more realistic levels of service, which will be dependent on the context. Although it endeavours to fulfil the water policy, in some cases it is either

unachievable or unsustainable, and then other service levels should be considered. Likewise, ISF is committed to fulfil the Tanzanian Drinking Water Quality Values.

Finally, ISF approach is increasingly focusing on water resources, dealing with issues such as water depletion, water contamination, protection of water sources from being polluted …, and adopting in their programmes the concept of IWRM. More effort should be done in this area, in particular with regard to capacity building at district and basin level (while strengthening linkages), and to the monitoring of water resources within the areas of intervention.

- **Equity**.

  Selection of areas of intervention: ISF aims to increase the national service coverage of safe water and sanitation by fostering WSS projects in the least served rural areas, reducing at the same time the still prevalent regional differences within the country (see chapter 1). In this respect, new developed tools (such as GIS) are expected to be helpful to identify future areas of intervention.

  Likewise, other criteria considered during the selection process include, at district level, accessibility (transport infrastructures), population distribution (avoiding interventions in scattered villages), and partners' capacity; and at local level, ISF takes into account District's priority, current water sources used by the community, and villagers' willingness to pay.

  Gender and Poverty: Lack of access to transport, energy and water are the main limiting factors which prevent girls and women from getting involved in educational and/or income generating activities. In response to gender issues, ISF intends to promote social transformation processes, aiming to "improve the specific position of women in the social structure" through their involvement in the advisory and decision making boards in the communities. Therefore, essential aspects such as the selection of the level of service, the design of the water schemes, the location and type of the waterpoints to make them more comfortable for the users, the family willingness to pay for the construction and maintenance of the systems …, should be decided with significant women participation. Similarly, their participation in activities related to Hygiene Campaigns should be also encouraged, being women the main receptors of hygiene promotion, and responsible for spreading the message within the community, because of their preponderant role in family health care. ISF is aware, nonetheless, of how challenging effective involvement of women in decision-making processes is, since they are often less capacitated (lower-level studies). Therefore, and to facilitate integration of women as members of the associations, build up capacities is needed to enable them to properly perform in their assigned tasks.

In respect of the inclusion of the poor and vulnerable groups, the establishment of local tariffs based on affordability and cost recovery criteria is promoted, ensuring the access of poor people to services.

- **Replicability.**

  In terms of the replicability of a project, it should be determined at two different levels. Firstly, within the community (are communities able to extend their water facility themselves); and secondly, in other villages, Districts, or regions (replicate the key aspects of the project).

  In this respect, ISF approach is based on community empowerment, and it has devoted a lot of effort to build up capacities at village level. As previously remarked, there are no reasons to believe that replicability within the community will not be achieved. The extent to which the construction of additional waterpoints is replicable, nonetheless, is significantly dependent on the collection of villagers' contributions; and if the revenues have to achieve cost recovery, they should include at least: operation and maintenance, replacements and spare parts, subsidies to the poor, and recovery costs of the water scheme (amortization). ISF should thus assist water entities to set charges accordingly. Likewise, with regard to sanitation and hygiene promotion, qualified people (PHAST trainers, local masons trained in latrine construction …) should be available after project completion.

  Nevertheless, replicability at district level is unsure, mainly because of the limited resources currently available. It is still challenging, although it is true that DWDs have more tools (MIS, GIS …), and new procedures have been implemented to enable them to carry out their responsibilities. If LGAs are expected to efficiently fulfil their commitment independently (without the assistance of external agencies), ISF should carefully monitor their performance, identify inefficiencies, and explore new approaches where necessary.

5.6. CASE STUDY I: MANG'OLA, HOW TO ENSURE SUSTAINABILITY

This case study describes the first programme implemented in the country, and it is of particular interest to somehow understand the evolution of ISF approach, which has put into practice a continuous learning process in a fairly changing water policy context (particularly the revision of the national water policy in 2002). The last stage of the programme is currently being executed, which aims to reinforce the long-term sustainability, by building up capacities at district level and assisting communities to legally register new created water management entities.

As previously outlined, there is considerable debate within ISF in order to develop a sustained exit strategy, and it is still not clear which indicators are going to be set during the final evaluation. In this respect, this process is to be challenging and complex, if it aims to critically prove the sustainability of ISF interventions. At the same time, it will certainly bring a broad range of interesting conclusions that should be carefully learnt to keep on improving their strategy.

In brief, the project has two different components: the improvement of governance (at both district and local level), and the increase of coverage regarding to access to safe, affordable and sustainable water and sanitation services. It has generated the following outputs:

- The District has fully collaborated during the entire project, providing appropriate support where needed. Its participation, nonetheless, has been limited to a more supervisory role, without assuming the leadership, which has been committed to ISF.
- In contrast, the partnership with local authorities has lacked both collaboration and cooperation, and somehow has undermined the progress achieved with other partners. In a clear response, ISF has focused on community participation, which has been totally involved and committed to the project.
- Beneficiaries are currently managing the facilities (water and sanitation) properly, through water management entities legally registered.
- Water entities have implemented an efficient fund collection, which has proved to be cost recovery in the short-term, although long-term replacements are not yet guaranteed.

Table 5.4

Data of projects implemented by "Ingeniería Sin Fronteras" in Mang'ola Valley

Village / Subvillage	Population (Census 2002)	Population to be served	Year Construct	Num of DPs	% Function	% of full coverage met by functional DPs [37]
Mang'ola Barazani	8,427	7,230	1996	25	60%	52%
Maleckchand	3,000	3,285	2004	13	100%	99%
Gorfan			2002	22	100%	
Kambi ya Simba	4,067	4,169	2002	1	100%	100%
Hydesh			2002	1	100%	
Jobaj	2,548	2,997	2002	1	100%	8%
Mbuga Nyekundu	3,275	3,852	2004	16	100%	100%
Total ISF	**21,317**	**23,362**		**79**	**100%**	**79%**

[37] Assuming NAWAPO's levels of service: 1 WP / 250 people

5.6.1. Major Findings

Karatu District and Mang'ola Valley. Most of the population living in the Valley of Mang'ola does not have access to sufficient potable water to guarantee its more basic needs (particularly hygienic practices), which is continuously causing water-related diseases because of poor water quality, lack of access to water, and deficient sanitation. In 2006, 63% of people had access to safe water in Karatu District (data provided by the DWD).

District Water Department in Karatu. The department of water employs 1 Civil Engineer (DWD), 1 assistant (Civil Engineer), 4 qualified[38] technicians and 2 non-qualified technicians; with some additional personnel in administrative tasks. It has worked as a local partner, and although it has resulted in a collaborative relationship, DWD has only been involved partially, adopting a supervisory role throughout the program. Accordingly, it is weak in the assumption of its responsibilities and has not enough resources to lead initiatives in the WatSan sector. Thus, building up capacities and promoting its leadership are the main goals to achieve during the execution of the current phase of the programme.

Community Participation. As previously outlined, the collaboration with local authorities has been complex and fruitless, mainly because of the poor existing governance in the villages of intervention. In the light of this discouraging environment, ISF has focused on working directly with the beneficiaries, building up their capacities and assisting them in the selection and creation of appropriate water management entities.

In essence, it has been a demand-responsive and participatory approach. However, significant effort has been needed to mobilize communities and to empower the beneficiaries, leading ISF to collaborate with other local organizations. As a result of this successful partnership, communities have both been effectively involved in all the activities, and have assumed their contribution to the project with cash, local materials and unskilled works.

Community Management. Capacity building at community level and new legally registered water management organizations (in particular Water Users Groups and Water Users Associations) has been a significant output of the programme. In this respect, communities have considered the shift from VWC to WUGs/WUAs to be positive, focusing on issues such as inclusivity, transparency, cost-recovery …

Sanitation and Hygiene promotion. It has been an integrated approach, fostering sanitation and hygiene promotion to be key components throughout the programme. In fact, its major goal (partially achieved) is the reduction of the prevalence of water-related diseases in the areas of intervention, through access to safe water, better sanitation and hygiene campaigns.

[38] A qualified technician has completed, at least, primary school.

In particular, sanitation improvement has been achieved after the construction of public latrines (mainly in schools, dispensaries, meeting places and markets) and the promotion of auto-production of private latrines. Likewise, PHAST methodology, Child to Child and other specific social marketing campaigns have been the basis of the hygiene promotion component.

As a result, the main outputs up to date (the project is not yet completed) have been 170 public latrines constructed, up to 83% reduction of severe diarrhoea, and 100% reduction of cholera.

Figure 5.5. Child to Child Campaign (Mang'ola Valley, Karatu).

Figure 5.6. Construction of a communal latrine (Kambi ya Simba, Karatu).

Technology and Availability of spare parts. In Mang'ola Valley, different technology has been employed: deep borehole with pump engines feeding a community tank and then supplying water through a gravity system (e.g. Mbuga Nyekundu), spring source with a gravity system (e.g. Barazani) or deep borehole with handpump (e.g. Kambi ya Simba).

With regard to spare parts' availability, there has been no problem up to date to maintain the schemes in case of minor components break down. However, availability of replacements or qualified technicians at district level to carry out more complex repairs is not guarantee.

Figure 5.7. Spring Water Source (Barazani and Maleckchand, Karatu).

Figure 5.8. Handpump (Kambi ya Simba, Karatu).

Sustainability. From March 2006 (4th phase), ISF is committed to reinforce the sustainability of the water schemes by the constitution of water users community entities qualified to manage, operate and maintain the facilities, and by building up District's capacity.

Nevertheless, there are few aspects which can threaten the long-term sustainability of the programme, which should be addressed before its completion.

- The process to legally register water management entities is bureaucratic, time-consuming and complex. Therefore, more flexibility should be advocated.
- There is no legal management and ownership of the spring which provides water to Barazani and Maleckchand (although the process of WUAs' registration is in place), and it is currently unprotected.
- Lack of preventive maintenance in most of the schemes.
- Lack of communication between different key actors at district level, threatening the possibility to replicate the programme where necessary.
- Service Levels: In Jobaj, there is only one waterpoint which is supplying water to more than 1.500 people (the population is scattered).

5.7. CASE STUDY II: SAME, AN INNOVATIVE APPROACH

Same is the last programme executed by ISF in Tanzania up to date, and it has clear innovative features in comparison with previous programmes. As previously outlined, ISF aims to adopt a learning-based approach, which based on continuous monitoring and subsequent evaluations, it allows to identify the major weaknesses and apply appropriate improvement measures. In brief, from the lessons learnt, two of them are of particular relevance:

- Strengthening partners at district level. The emphasis is moving from working with the District to working through the District; building up their capacities, and aiming to involve District staff in both all decision-making processes and all the activities during the project implementation.
- Water Resources Management. It is an integrated approach, where water resources are to be linked to water and sanitation services delivery.

The project is still in the implementation phase, and the expected outputs to be achieved are summarized in the table below.

Table 5.5

Data of projects implemented by "Ingeniería Sin Fronteras" in Same

Village	Population (Census 2002)	Population to be served	Num of DPs	% coverage expected by functional DPs	Water Scheme
Njoro	3,271	2,100	6	100%	Borehole + Storage Tank + Gravity System
Ischinde	1,800	1,757	9	100%	
Ischinde – Masai Community - Emugury			2	100%	Borehole
Vumari	1,827	1,800		100%	Spring + Storage Tank + Gravity System
10 - 15 additional villages		36,000			Different Technologies
Total ISF	**---**	**41,657**	**17**	**100%**	**---**

5.7.1. Major Findings

Same District. Same has an overall of 83 scattered villages (some of them are located more than three hours by car far car from the capital). With regard to the water and sanitation sector, more than 50% of population lacks access to WatSan services, situation that is getting worse due to the drought suffered in Tanzania during the last years. In addition, Same District has an estimated livestock population of more than 112,000 cattle and 45,000 goats, with many pastoralists' tribes in the area. The main aspects needed to tackle are:

- Lack of availability of safe surface water sources.
- Existing drinking water systems are hardly working due to poor maintenance during operational years.
- Scattered population, which complicates the access to WatSan services

Above all, Same District Council prioritized 22 villages (60,158 people) which were particularly underserved, with an average coverage of 18% of people with access to improved water. ISF is executing a pilot phase providing service to 3 villages among these 22, and between 10 and 15 more villages are being selected for future interventions.

District Water Department in Same. The DWD focuses its activities on four different areas: O&M, Construction, Planning and Designing and Registry. It is made up of one engineer (DWE), 5 qualified technicians, 7 non-qualified technicians and administration staff; its transport means are reduced to 1 motorbike and 1 car; and 2 PCs and 1 laptop are all the resources available to implement the MIS. It obviously lacks resources (both funds, human and material) to efficiently fulfil its commitment. In addition, capacity building is also required, in particular in water technologies, MIS, management, community mobilisation, and hygiene

promotion issues. There is thus a strong need to advocate for a solution in terms of sustainability.

In contrast to its scarcity, it endeavours to undertake all its responsibilities, optimizing their resources and becoming a reliable partner for ISF to implement WatSan projects. One of the clear outputs of this partnership is to be a comprehensive Water and Sanitation District Strategic Plan 2011-2015 (aligned with next National Poverty Reduction Strategy), which has to serve for a better resource allocation in the sector, and improving efficiency and its accountability towards Same villagers.

Community Participation. They are expected to play a central role in the project, and it is being achieved through community mobilisation, and the promotion of a demand-driven and participatory approach. Therefore, communities are fully involved in all stages during the project, and their contribution is based on unskilled labour works, cash and local materials. However, regarding to some technical decisions (in particular the type of water scheme), their involvement is in some cases both unwanted and useless, since the possibility to influence the final choice is scarce (due to the limited availability of water sources).

Figure 5.9. Allocation of Waterpoints within the village in a participatory approach (Masai Community in Ischinde, Same).

The main goals are to ensure ongoing operation and maintenance, to implement an appropriate collection of funds within the community, and achieve behavioural changes regarding to sanitation (hygiene promotion).

Community Management. At local level, the creation of water management entities has to serve as a democratic organizational model for the community, which can be replicated for other purposes. In this respect, the existing Village Water Committees are non-representative, financially unsustainable, do not promote appropriate operation and maintenance of the

facilities, and report inaccurate and insufficient data to the DWD, resulting in poor monitoring and lack of knowledge about the current situation within the District.

It is thus needed to promote the registration of new water entities, and the process of moving from VWC to other management alternatives (WUAs and WUGs) is already in place, although it is expected to be complex (any WUA has been yet registered in Same).

Water Resources Management. As outlined previously, the program in Same has included a water source analysis to asses to possibilities of surface water, and it has been complemented by an hydrological survey for groundwater, in order to determine the most appropriate water sources on a sustained basis.

Similarly, environmental aspects have been considered, aiming to raise awareness among the communities on environmental issues related to water supply and sanitation facilities (source protection, water contamination …)

Technology and Availability of spare parts. In Same, the technology employed has been deep boreholes with pump engines feeding a community tank, supplying water through a gravity system which connects the communal waterpoints. The final choice has been mainly dependent on the scarce availability of water sources, prioritizing to groundwater sources rather than treating polluted surface water.

Figure 5.10. Construction of a communal waterpoint (Njoro, Same)

With regard to replacements and availability of spare parts, the DWD has not implemented a proper spare parts supply chain, which can clearly threaten the long-term functionality of the schemes.

Levels of service. The urgent lack of safe water for human consumption in Same (District with the lowest coverage of the Kilimanjaro Region) forces people to make long walks (up to 6 hours) to get a bucket of water. In response to this unsustainable situation, ISF is aiming to improve the access to sufficient water of good quality in the villages of intervention, targeting the service levels to provide a public waterpoint with two taps for less than 400 people, and for 600 people in case of installing handpumps, supplying in both cases 25 l per person and day within 20 minutes of distance.

5.8. KEY OBSERVATIONS

ISF-funded projects and the subsequent implementation in the three regions in which they work aim to have an overall impact on health by reducing the prevalence of water-related diseases. It is to be achieved through an integral approach which considers three main components: sustained access to safe water, improved sanitation and hygiene promotion.

Nevertheless, more recently ISF has started to consider in their programmes another key aspect in terms of sustainability: water resources management. Water's scarcity, gradually population growth and water contamination are putting increasing pressure on water resources, and it is therefore essential to incorporate the protection of water ecosystems into a WatSan programme. In this respect, significant effort is still needed to effectively integrate water resources, mainly with regard to the development of a reliable monitoring system and to the capacity building at district and basin level.

It is also clear that ISF is playing a crucial role in all their programmes, leading most of the activities during the project implementation and coordinating all the partners involved to ensure that the targets are effectively meet. At the same time, local and district authorities (in particular DWD) are gradually assuming more responsibilities regarding to the implementation of the day-to-day activities, although they lack capacities and resources to lead initiatives, and thus they still adopt a supervisory role that prevent them from being real protagonist of the development of communities. Similarly, other services providers are rarely engaged in the programmes, and although it is true that they are often shortage of appropriate skills, building up their capacities and promote partnerships in the areas of intervention should be recommended. In contrast, ISF works directly with communities, and it is certainly the major strength of this approach. ISF is endeavoured to build up their capacities, including ongoing O&M, management of the facilities and financial accountability; and to assist them during the process to shift from existing VWC to new legally registered water management entities.

It is still early to confirm whether this approach will prove to be sustained, although there are some encouraging indicators (mainly at village level) to believe that schemes will still be

functioning in the long-term. In terms of replicability, nonetheless, the strong lead role of ISF and the lack of resources at district level threaten sustainability, and if significant impact is intended to be achieved, ISF should consider the possibility to readapt its approach accordingly, playing perhaps a more advisory role.

Equally important, ISF is tackling a challenging internal reorganization in response to a gradual expansion of their activities, with an ambitious programme in Same which is still in the pilot phase, and with a recently inaugurated office in Dar. It has been a demand-driven process, and intuitively it should bring attractive opportunities in terms of better coordination and strong linkages at national level. The outcomes of this process should be, nonetheless, thoroughly monitored, in order to ensure that resources are being invested efficiently, to understand if concrete benefices have been achieved within the water sector, and to promote a cost-effective structure.

To conclude, it has already been mentioned that an interesting debate is in place to develop an efficient exit strategy in terms of sustainability. Likewise, it has also been pointed out that it is too early to assess the sustainability of ISF interventions. Nevertheless, some aspects that can undermine the functionality of a waterpoint have been identified and discussed; and they should be seriously tackled in order to promote more sustained alternatives. Some of them are of particular relevance, such as to engage the private sector, the availability of spare parts and qualified technicians at district level, the lack of preventive maintenance of the schemes, to integrate the water resources component in the programmes, and to advocate at national level for more resources to the LGAs.

PART III: FUTURE CHALLENGES AND CONCLUSIONS

6. FUTURE CHALLENGES:

CONSOLIDATING, IMPROVING, SUSTAINING AND MONITORING THE NRWSSP

6.1. THE NATIONAL RURAL WATER SUPPLY AND SANITATION PROGRAMME

The National Rural Water Supply and Sanitation Programme (NRWSSP), as previously outlined, is to be implemented in Tanzania under the overall responsibility of the Ministry of Water (MoW), as an effort to reduce poverty and improve the health and quality of life of the rural population by sustained and equitable access to safe water and sanitation. The Government of Tanzania (GoT) recognises the importance of universal access to improved WSS as a pillar to the Poverty Reduction Strategy, and the need to develop institutions that will enable the rapid expansion of services across the country. The Programme focus on the inadequate supply of clean and safe water and the low standard of sanitation that prevails in rural settlements, so the interventions seeks to help institutions and communities to implement sustained WSS facilities.

The reality that the Programme seeks to improve is characterized by (i) different and sometimes conflicting aims between multiple actors; (ii) a lack of predictability and knowledge about many crucial sector activities and their environment; (iii) a need to utilize user knowledge and local resources to empower beneficiaries to participate; and by (iv) a need to strengthen the capacity of recipient organizations to carry out activities on a sustained basis.

It is therefore worthwhile considering an appropriate alternative to effectively address the causes of unsustainability, particularly in light of the high non-functionality rate of the water schemes implemented in the past. A more participatory learning-based approach to planning and implementation should be adopted (Therkildsen, 1988), in which things are expected to go wrong, but where mistakes are seen as opportunities to improve the Programme, moving much of the action from the “isolation” of the desk to the “complex conditions” in the field. Failures, mistakes, continuous adaptation and redesign should thus be not only inevitable, but the basis of the new strategy.

6.2. CONSOLIDATING AND UNDERSTANDING THE CURRENT SITUATION

The first step towards a sustained access to improved water and sanitation services is to consolidate the current situation, by first identifying and then addressing the gaps in service delivery and institutional capacity.

A full analysis of the data available is thus required to understand the current WSS coverage. However, a water point mapping exercise has not been conducted in every

region. The most reliable data on access to improved water supply and sanitation was published in the 2002 Population and Housing Census, which reports significant regional differences (see Chapter 1). These differences stem from an extremely unequal service delivery in both urban and rural communities across districts.

Three key aspects influence the irregular distribution of water schemes and sanitation infrastructure (Owen, 2006):

- **Coverage gaps:** Villages and sub-villages with no improved water supplies at all.
- **Areas of under-delivery:** Villages that have improved water supplies, but where a high percentage of the population is not served due to lack of DPs in some sub-villages.
- **Areas of non-functionality:** Villages and sub-villages where water points exist but are under repair or no longer working.

Tackling areas of non or under-delivery by increasing the number of DPs constructed and deal with the problem of non-functionality in other areas are different options with their own cost implications. Therefore, identifying and addressing the most cost-effective of these opportunities in each area is required if the intervention is to be efficient.

- The NRWSSP aims to fill the majority of gaps establishing large-scale, capital intensive water schemes, most of them in areas previously un-served or where existing schemes have broken down beyond repair.
- Similarly, areas of under-delivery have to be tackled as well, although in order to use the resources efficiently, targeting and prioritizing to the areas of greatest need and highest returns is recommended.
- With regard to areas of non-functionality, there will be many cases where non-functioning DPs can be easily brought back into service. Whenever possible, it is probably the most cost-effective intervention, since the resources invested to repair a water facility are significantly lower than the ones required to build new ones.

  In addition, identifying the cause of non-functionality is also desirable, aiming to reduce recidivism and to propose tailor-made solutions accordingly. The District Water Department, supported by external facilitation, should thus foster or carry out a low cost and focussed analysis to simply classify the widespread failures of water facilities, identify the most effective solution, and relate both failures and possible solutions to systematize the appropriate approach to prevent or overcome the causes of non-sustainability.

6.3. IMPROVING TOWARDS THE MILLENNIUM DEVELOPMENT GOALS

The NRWSSP targets that the percentage of population in rural areas with access to safe water will be 65% by 2010 (MKUKUTA); at least 74% of the by mid 2015 (Millennium Development Goals); and that 90% of the rural population will have access to water and sanitation by 2025 (Development Vision 2025 for Tanzania).

Not only coverage, but also equity has been taken into consideration in order to achieve all these targets, since reducing the current differences within districts with regard to access to safe water is essential. The following maps show the projected coverage and targets at the district level that the NRWSSP aims to achieve.

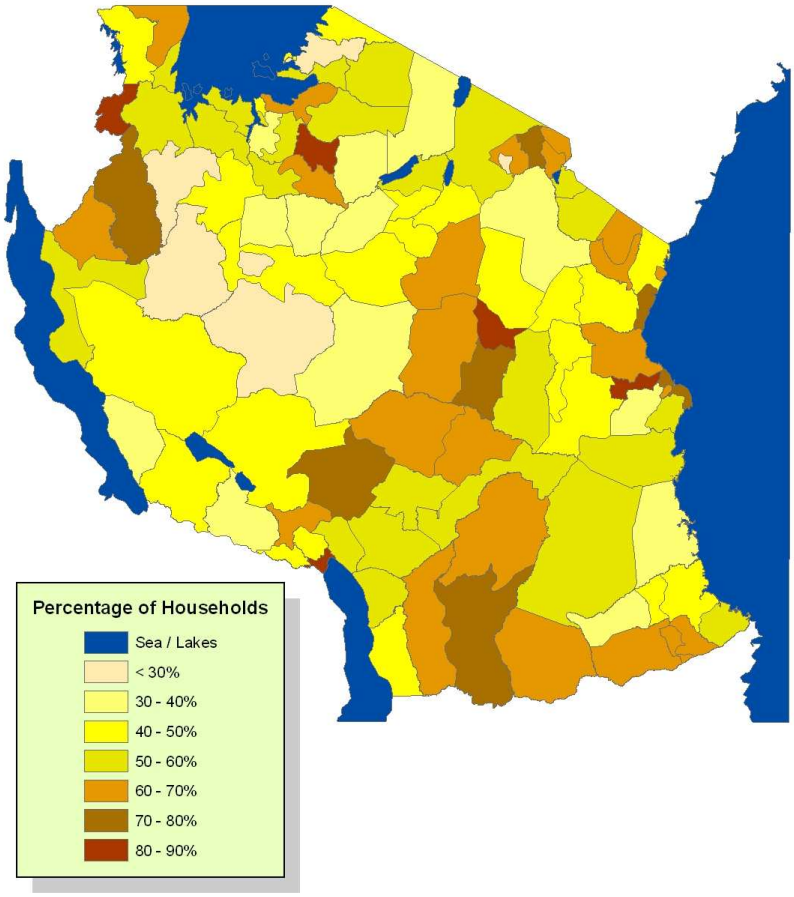

Figure 6.1. Access to Improved Water Sources in 2004.

In 2004, and according to the map, stark variations still remain, and whilst coverage in some districts is below 20% (Urambo -6.8%- and Tabora -11.5%- in Tabora Region; or

Bukombe -16.4%- in Shinyanga Region); there are others where the percentage of population with access to improved water sources is over 80% (Kongwa -80.1%- in Dodoma Region; Ngara -83.6%- in Kagera Region; or Maswa -85.5%- in Shinyanga Region). The nation-wide average coverage is roughly 50%.

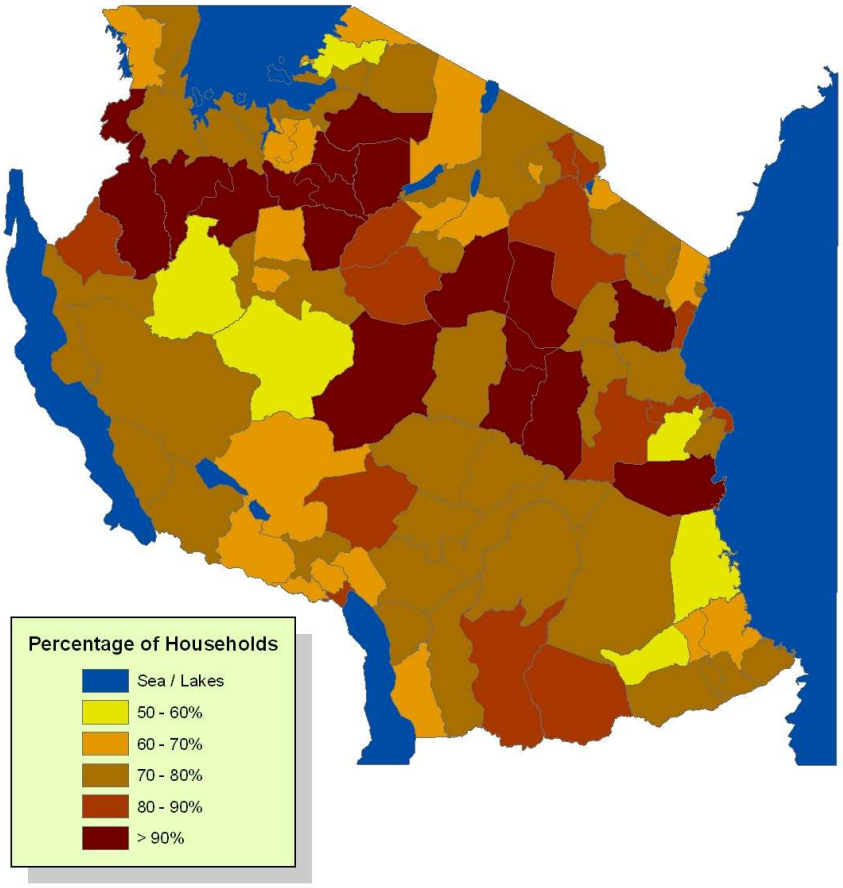

Figure 6.2. Access to Improved Water Sources in 2015 (Millennium Development Goals).

The projection sets a final target of 79.5% by 2015, providing water supply services in rural areas to 16.8 million people. Although as is shown in the map differences within districts are evident, compared to 2004 the inequity from the least and the most served districts has considerably been reduced, and only in few districts the coverage is less than 60% (such as in Urambo -54.4%- or Sikonge -56.5%- in Tabora region; or in Musoma -54.5%- in Mara region).

Finally, the projection by 2025 establishes an average coverage of 90%, having served safe water to a total of 34.5 million people (cumulative from 2004). Clearly, regional variations have been eradicated, and even in the least served districts, more than 80% of people access to water from improved sources.

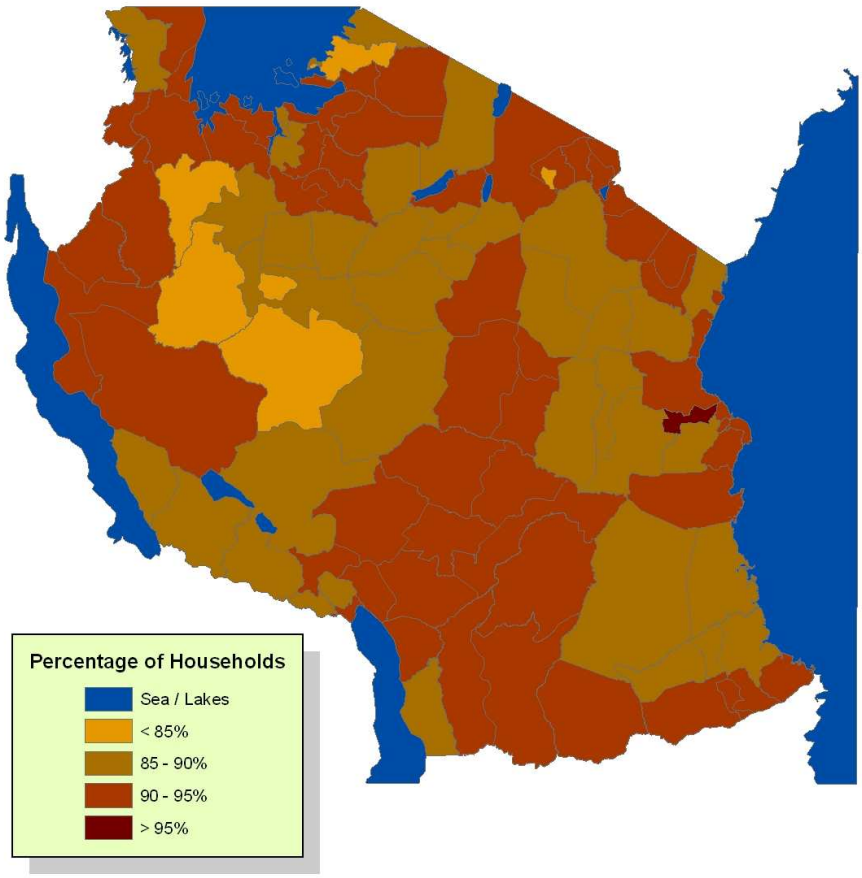

Figure 6.3. Access to Improved Water Sources in 2025 (Development Vision 2025)

6.4. THE CHALLENGE, SUSTAINED INTERVENTIONS

How may the situation be improved? How may these improvements be sustained?

In essence, sustaining means to ensure that existing and future investments in the water sector consider the development of appropriate models of water point management. Nevertheless, the drive behind attempts to meet the Millennium Development Goals is drawing attention towards increased coverage to meet the national targets and fast production of new schemes, which can potentially divert attention from the need for community empowerment, institutional capacity building and ongoing maintenance of water facilities, both of them being critical for sustained service provision.

It is much easier, faster and controllable to construct schemes than it is to build up recipient capacity to maintain them. Therefore, the dilemma that must be confronted is a choice between a faster immediate improvement of the rural water supply situation,

focussing on specific targets but where villagers do not play any significant role and thus where sustainability in the long run is questionable; or much slower improvements as a result of empowering communities by local commitments and capacity building to plan and implement, which may be perhaps more sustainable.

The NRWSSP, implemented under the water sector policies, should focus on processes rather than on targets if it intends to be sustainable, and should be based on a participatory learning-based approach within its local, institutional and macro-economic context. In particular, despite establishing detailed specifications of future production targets (e.g. number of new schemes to be constructed per year or percentage of service coverage), the inputs and the outputs of other essential future activities such as training, participation, organizational procedures should have also to be specified in, at least, similar detail.

To assist in the pursuit of sustainability, we make the following recommendations:

1. ***Management at the lowest appropriate level***

   The government's inability (largely because of lack of resources) to maintain WSS infrastructure has been the major factor contributing to the delegation of management responsibilities to the lowest possible level (Carter et al, 1999). Therefore, the challenge is not the technical considerations relating to water schemes but how to ensure that systems are adequately managed and thus remain functional once installed, by users paying for water services and those payments being appropriately managed and applied to system operation and maintenance.

   In Tanzania, the NAWAPO differentiates between diverse management alternatives, aiming to create more representative and transparent water entities than the previous Village Water Committees (VWC). The process of legal registration of these new entities, nonetheless, is complex and challenging. Thus, more flexibility and simplicity should be advocated at district and national (MoW) levels to prevent it from being excessively bureaucratic and ineffective. At the same time, the WUG as the smallest unit of the operation and maintenance team is the most economically powerful, but unless the WUGs perceive a real gain from contributing to the WUAs, they are unlikely to support them (Owen, 2006). Therefore, WUGs and WUAs need to be monitored as they grow into their roles, with regular audits to their activities to ensure that community contributions are being collected and managed properly, since these financial checks are essential to ensure openness and transparency.

   An alternative to the WUG/WUA model is the private sector participation model, which is receiving growing attention in rural areas; since it can be an effective

management option depending on the technology implemented (e.g. mechanised water schemes). Carter et al (1999) states that if the private operation is to be considered, the priority is to develop the industries which can support the sector (as providers of both equipment, materials, and services), although the key aspect is that reasonable profits should be achievable, while consumers retain appropriate rights, protection, and real choice.

At a practical level, whatever management options may be in place, the responsibility for routine water scheme operation and maintenance ultimately falls to the contracted manager, whether it is a WUA, WUG, or private operator, and thus ensuring appropriate management capabilities is essential on a sustained basis.

The second challenge lies within district departments themselves, particularly the District Water Department (DWD). As a key player to the success of water schemes, it is committed to provide training, regulation and ongoing support to villagers, as well as to following up and monitoring the performance of the schemes. Clearly, not all the districts are equally prepared to efficiently fulfil their responsibilities, and because of the limited resources available, greater emphasis should be placed on capacity building of the recipient organisations and on institutional support from the Government and non-Governmental organisations, if the interventions are to be sustained.

Last but not least, the radical change of approach from direct implementation of projects to the enabling of communities to manage their own schemes requires major shifts in the Government's attitude. The hallmarks of community empowerment and capacity building are factors such as transparency, partnership, flexibility, respect, and empathy, while the institutional models generally associated with government departments, however, tend to be 'top down', authoritarian, and rigid in their structures, staffing, rules, and procedures (Carter et al, 1999). Thus, new models of institutional, contractual, and legal relationships between communities and government departments should be envisaged.

2. Communities owning and managing their water schemes

The issue of "ownership" is crucial to the success of the project. The sense of (and actual legal) ownership that the village WUGs have over their new waterpoints is in direct contrast with the understanding that the villagers used to have in the past. In previous projects, the implementer worked alone in identifying sites and constructing the schemes, and when they broke down, the villagers did nothing to repair the wells, apparently stating that they belonged to the implementer and not to them. While it is

still early to say whether the new schemes will be effectively maintained, there is a sense that the very real ownership that the villagers have over their waterpoints will at least imply a recognition of who is responsible for fixing the pumps, even if the community does not carry out the work.

The participatory approaches, which have to be coupled with the registration of legal ownership of the waterpoints, may be responsible for this very different attitude to the waterpoints. Thus, to ensure that WUGs and WUAs are an integral part of the partnership is required, promoting their regular attendance to the partners' meetings, and offering them the opportunity to improve the project processes.

Nevertheless, Owen (2006) warns us that community participation is not always the optimal approach, since in cases of more technologically-complex water schemes, (e.g. deep boreholes with pumps and engines), community participation in planning and implementation may be unnecessary and even misleading. Thus, another approach where community members become commercial consumers rather than participants in a development project, delegating the management of the scheme to a private operator, should be considered as well.

In any case, if an efficient management is desired, and despite the need to enhance the sense of ownership by the community of the water facility, programmes should be designed in such a way that fosters every stakeholder group's best interests to fulfil its part of the service delivery, understanding and defining, in any given particular context, which have to be the role and responsibilities of each different actor.

3. Availability of spare parts and know how

In terms of equipment and spare parts, these are to be made available through the WUA, which has a fund for spare parts, financed through contributions from the WUGs. The spare parts themselves should be bought and held at district level, and sold at cost price to any member group (WUG). Therefore, a reliable spare parts outlet has to be established at district level to ensure spare parts availability when the need arises, minimising the time required to repair the scheme and thus improving its effectiveness. Nevertheless, even if the outlet has already been established in some districts, it has to be seen whether this will prove successful, as spare parts are not yet in great demand (Owen, 2006).

At the same time, further capacity building is needed in various areas, including updating the training of pump attendants, since in terms of sustainability, a great deal rests on their ability to do their work. Therefore, and despite the difficulty to monitor

the efficacy of training and capacity building, further training of selected pump mechanics – perhaps one for each village – for the more complex breakdowns should be promoted, as well as to establish preventive maintenance schedules (which are currently neglected) and leak detection programmes.

4. ***Full cost recovery for operation and maintenance (O&M) of the scheme, as well as replacements***

   Cost recovery is based on the practice of charging users the full (or nearly full) cost of providing the water service, including at least O&M expenses and longer term rehabilitation needs.

   While by and large, community contributions are being made regularly, there are still some WUG's members who are either unwilling or unable to contribute sufficient funds to cover the real costs of running the waterpoints. At the same time, and even if an efficient revenue collection is in place, O&M costs are not always calculated correctly, which may result in WUGs collecting insufficient funds to sustain the facility. Albeit this is not yet a problem, as in the first two or three years the waterpoints will not need significant amounts of funds or skills to keep in action, the costs of maintenance, and the skills required, will begin to increase after this initial period reason. In fact, current models of water fund management are sustainable in the short-term but are not proving effective for major equipment replacement, since the more significant problems of sustainability come about when major scheme components break down, usually the diesel engines.

   Although the system set up of WUAs or private operation, both with larger funds available for maintenance costs, may go some way to allay this problem, these management alternatives are new and untested, and therefore, only if the WUGs have managed to collect the appropriate funds effectively will the waterpoints be sustainable.

   Equally important is the issue of the initial capital contribution that NAWAPO stipulate. Although it can be seen as an indicator to measure the community's willingness to pay, amendments to the policy should be advocated if the goal is unrealistic or a big burden for the sustainability of the project, and more efforts should thus be made to introduce effective and realistic financial regulation of village water schemes.

   Finally, there are some organizations (Owen, 2006) which are exploring innovative new approaches to funding water scheme's maintenance, such as the NGO

MAMADO in Dodoma Region, where the resources of several villages are combined to maximise interest rates, enhance collective credit-worthiness and ensure that replacement parts for any one scheme become affordable using the resources of many; or the possibility to involve micro-finance institutions and link funds to communities with soft financing from development partners that could mitigate the risk for the financial institution. Many possibilities exist, and should be explored.

5. The protection of water sources

To have a water supply system entails a sustainable water source of sufficient quantity and quality. An Integrated Water Resources Management (IWRM) implies the integration in a sustainable way of the needs of all users while maintaining a healthy environment. IWRM aims at involving all actors: individuals, communities, companies, organisations and governments; in all sectors: irrigation, domestic water supply, industry; at all scales: local, national, and international (Smet and Wijk, 2002); and thus the differentiation of roles and responsibilities according to sector and scale is crucial if it is to be sustainable.

At a national level, although the NAWAPO defines the strategy, better cooperation between key stakeholders should be encouraged, and an appropriate monitoring framework with a Management Information System (MIS) needs to be implemented to ensure that the information needed to make decisions at each level is available.

Within the basins, allocation decisions are to be made, and IWRM has to be considered for the sustainability of waterpoints, particularly shallow wells, as there is significant water stress in some areas in terms of both quality and quantity. Therefore, IWRM should be explored, and more research should be done at this level in order to better protect the aquifers, particularly into issues such as soil erosion. Likewise, other options for water delivery need to be considered in such water stressed areas.

At a local level, although communities' involvement in allocation decisions is desired, the goal is to obtain an optimal use of resources, ensuring that local activities do not adversely affect the quality or quantity of water available to downstream users. Catchment management and source protection, while ensuring an efficient water use (discouraging wasteful use) are thus essential activities to enhance the sustainability of the supply.

6. Balancing between technology, service level and the capacity of the beneficiaries

The service level and the definition of coverage established by the Government are in some cases both unachievable and unsustainable. Therefore, the policy needs to be

revised to better reflect the reality in the rural context, and instead of having an indicator related to the minimum distance between a household and a water point (400 metres is too costly and an unrealistic target in highly dispersed rural areas), other levels of service (such as ensuring a minimum number of beneficiaries for a waterpoint depending on the technology available) are both more realistic and more sustainable.

Likewise, with regard to water quality, awareness of and provisions for water quality monitoring must be strengthened to ensure safe water supply, although even if the quality of water at source is safe, it often deteriorates before final consumption (during both transport and storage), undermining the sustainability of the project. At the same time, a revision of the national standard guideline values should be advocated, in order to adopt the values that WHO recommends as quality standards (e.g. the national standard value for fluoride in rural areas is of 8 mg/l, which is very high compared to the WHO guideline value of 1.5 mg/l -see Annex D-). In some cases, nonetheless, flexibility and a tolerable range should be specified, since higher standards can disqualify a water source.

Finally, it is also important that rural water supply projects present communities with a true technology choice, and that they are made aware of the financial and managerial implications of each possible option. Therefore, and before the final decision is made, the optimum technological alternative has to be tackled with the one desired by the community and meet their requirements; since ease of operation and maintenance, user acceptability and cost must be considered jointly (Harvey and Reed, 2004).

7. The recognition of women as key players and the inclusion of the poor

The better the gender and poverty focus during planning and implementing stages, with both women and men, poor and better off participating in the management of the facility; the better the services are sustained (Gross et al, 2000).

Equity is a key criteria to consider in the development of the management systems, and although it is in general carefully considered, it can still be challenging in some cases. Therefore, local authorities should promote gender issues during the process of creation of new management organizations at village level, ensuring that women is recognized as a key actor in the provision of water services.

Equally important, pricing can be used to reconcile differing imperatives, such as equity in access, demand management and cost recovery. It is thus essential that the most vulnerable members within a community are not priced out of the opportunity to

access to safe water. In any case, if programs are systematically excluding sections of the population (such as the poor), the strategy needs to be amended and some form of targeting the access of these groups to access water from improved sources is recommended.

6.5. LEARNING TO BE EFFECTIVE, LEARNING TO BE EFFICIENT, AND LEARNING TO EXPAND

Monitoring and evaluation are the basis of a participatory learning-based approach, which in brief means to continually build on experience in order to explore more cost-effective and sustainable models of service delivery.

In essence, while monitoring is (Harvey and Reed, 2004) an ongoing process that covers all levels of operation (from national governments to communities) and all aspects of rural water supplies programmes (e.g. policy, institutions, finances, service level, technology and O&M); evaluation seeks two main goals (Cairncross et al, 1981): to provide feedback to the project itself (the degree of achievement of objectives and performance), and to provide feedback to the planning process (main lessons gained from project experience). Both monitoring and evaluation are needed to put into practice a continuous learning process based on "building capacity for action through action" (Therkildsen, 1988), where programmes evolve and grow, and are not simply designed and implemented.

To be **effective**, this approach requires an information system for continuous monitoring and evaluation to obtain relevant, timely and concise information. It should be related to the programme objectives, and therefore a set of functional indicators (providing useful information and easy to measure) should be identified and clearly discussed with all stakeholders.

At this stage, the NRWSSP has developed an ambitious MIS and a set of core indicators as the basis of the monitoring data, focused on both institutional strength and performance of the water facility. It should consider, nonetheless, the monitoring of not only the ongoing activities during the project implementation but also the quality of the services supplied, as an efficient tool to measure the functionality of the facilities. While it is still early to say whether this will prove successful, a gradual implementation (adopting a staged approach) is essential if this new tool is to be useful, as well as capacity building, institutional support and appropriate means to recipient organizations, in order:

- to ensure clear understanding of indicators and a proper and unique way to measure them,

- to promote continuous dialogue with beneficiaries as a source of reliable information to monitor the performance of the schemes,
- to check the accuracy of the values of the indicators, and
- to gain knowledge about how to use the information monitored in decision-making processes, as monitoring is pointless unless the information collected is used to inform decision-making, improve effectiveness, and contribute to the sustainability of the programme.

To be **efficient**, it necessitates proceeding gradually, so that the knowledge required to plan is gained simultaneously with the capacity to implement plans. Similarly, the staff has to be encouraged to report 'what they actually see and do', and not 'what they think the management would like to hear', and it implies that there is also the need for some institutional reorientation (Therkildsen, 1988), promoting organizations capable:

- for responsive and anticipatory adaptation; which not only do not deny errors, but look on them as the basis of learning, as a source of vital information for making adjustments in plans or in implementing activities to achieve the proposed programme outputs,
- to plan in close cooperation with the intended beneficiaries; building on rather than replacing indigenous knowledge, since rural people have a great deal to contribute to programmes, and
- to gain knowledge through action, integrating in the same team all the key actors and fostering researchers to work hand-in-hand with operating personnel; planning to be done by those responsible for implementation; and managers to spend a substantial amount of time keeping in contact with village reality.

To be **able to expand**, the experience gained and capacities developed during the overall process should be easily shared with other similar programmes, being the rate of expansion determined by how fast the necessary organizational capacity can be developed. This clearly requires, however, that flexibility has to be maintained, with close attention to what happens on the ground in order to prompt detect ineffectiveness or inefficiency and then refine or adjust the programme into each particular context.

To conclude, monitoring and evaluation are essential activities to determine whether or not strategies have been successful and achieved the desired goals. However, in a participatory learning-based approach, MIS is crucial not to monitor deviances between what was planned and what was implemented; but to encourage error detection, to learn

from errors, and to plan corrective actions on the basis of this experience. Similarly, planning without implementation leads to implementation without planning, so that these activities need to be linked in a continuous planning – implementation – learning – planning process, enhanced by a permanent dialogue with the intended beneficiaries.

7. CONCLUSIONS

7.1. CONCLUSIONS

In Tanzania, the last few decades have been characterized by a significant reliance on government interventions to provide people with clean water nearby. Nevertheless, despite major efforts and the implementation of donor-supported schemes throughout the country, roughly 50% of the total population still lack access to safe water and improved sanitation.

In the rural water sector, WatSan projects failed to be sustained in the long-term, mainly because of the approach used by the donors, which emphasised on the technical aspects and the rapid production of new facilities, and left participatory issues and community empowerment on the side lines.

Different approaches and considerable debate have taken place to try to understand the right strategy to improve access to safe water. Issues such as (i) the appropriate technology, (ii) the importance of good maintenance, (iii) the role of community participation, (iv) the empowerment of women, (v) the difficulty of reaching the most vulnerable groups, and (vi) the need of cost-recovery; are being discussed in a context characterised by conflicting aims between multiple stakeholders, by a lack of information and knowledge about many crucial sector activities, and by a strong need to build up capacities of recipient organizations at all levels (national, district and local).

In essence, three main issues are needed to be addressed: sector policies, community participation, and institutional capacity building.

In this respect, in response to the poor performance of water schemes, and on a consultative basis with other key agencies involved in the sector, the Government of Tanzania has attempted to tackle this challenging reality by developing a comprehensive policy framework. In brief, it is based on the principle of devolution by decentralisation, where the responsibility moves from the central government to local authorities and communities; and on cost-recovery, shifting from the past implemented culture of ‘free water for all’ to the need for communities to carry out activities on a sustained basis, ensuring at least ongoing operation and maintenance.

This is a study of three different approaches, which aimed at fulfilling sector-related policies while being committed to sustainable WatSan projects. They all share the same goals, although they rely on different implementing partners, focus on different strategic aims and use different key indicators to monitor their performance. Yet, they all strive for sustainability.

WaterAid (WA)

WaterAid bases its implementation methodology on two different strategic aims: to provide sustained WatSan services to both rural and urban population and to influence policy reform processes. To be effective, nonetheless, it needs to closely integrate the policy work and their WatSan programmes, enabling efficient linkages between policy inputs and the relevant outputs at community level.

In its service delivery, WA has tended in the past to lead the overall project implementation, which has not brought the expected results in terms of sustainability. Therefore, its role is moving from leadership to the provision of financial and technical support, aiming to play a more advisory role in the project as an external facilitator. Equally important, WA is not directly involved with the beneficiaries, although this is not without risk, since more effort is then needed to work more effectively through partners, building up their capacities and enabling them to take the operational lead.

Firstly, innovative approaches have to be explored to optimize their partnership with local authorities, aiming to take advantage of the gained experience of the District Support Teams as implementing agencies, but critically evaluating the weaknesses and strengths of this approach, in particular regarding to financial issues.

Secondly, implementing through district partners has resulted in an inefficient attempt to empower the community and involve it in all stages of the project. Since the beneficiaries are expected to assume the operation and maintenance of the schemes and to ensure cost-recovery, WA should consider other approaches to effectively achieve their involvement. It is not only to promote their participation, but to increase their sense of ownership over the waterpoint and to build up capacities in terms of management, including at least financial accountability, operation and maintenance, and better skills to negotiate either with private operators and local authorities.

World Bank (WB)

The World Bank seeks to play a significant advocacy role and assist the government in the development of the appropriate water sector-related policy framework. In addition, it is not an implementing agency, as it relies on the Ministry of Water (on behalf of the Government) to execute its WatSan projects. Nevertheless, and in accordance with the principle of "decentralisation by devolution", the management and coordination of the day-to-day activities is undertaken by the LGAs; guaranteeing as well community participation in all different stages since it is a demand-driven approach.

In this respect, the WB's strategy is based on mutual and close collaboration with the Government, which is thus committed to ensure the sustainability of the Programme.

In rural areas, the WB has recently launched through the MoW the National Rural Water Supply and Sanitation Programme (NRWSSP), to improve the access to reliable and sustained water supply and sanitation services for the rural population. There is no doubt that because of the magnitude of this intervention, the ability of the nation to meet the water sector-related targets is deeply dependent on its performance in the long term; and albeit it is still early whether to confirm if this approach will prove to be sustained, there are some constraints that threaten its success, and should be thus carefully explored.

At the community level, there is often lack of management capabilities, and it is essential to guarantee the long-term functionality of the schemes, achieve cost-recovery and carry out appropriate O&M. Likewise, districts lack resources (both human and equipment) and capabilities to undertake their commitment, in particular the supervision of the ongoing and completed projects. Equally important, to monitor the progress of the Programme is crucial to assess the performance of each partner at all levels, and the MoW should thus promptly implement at district level an effective Management Information System.

Finally, the role of the WB should not be limited to routine supervisory inspections, and it is required to thoroughly monitor the progress of the programme, identifying inefficiencies and whether the implementation capacity of the partners has been over-estimated. Where necessary, it should advocate for other approaches accordingly.

Ingeniería Sin Fronteras (ISF)

There is evidence that ISF is playing a crucial role in all their programmes, leading most of the activities during the project implementation and coordinating all the partners involved to ensure that the targets are effectively meet.

It is also true that local and District Authorities (in particular DWD) are gradually assuming more responsibilities regarding to the implementation of the day-to-day activities, although they still lack capacities and resources to fully assume them and lead initiatives independently, without the support of ISF. Therefore, capacity building at district level is essential, while adopting a more supervisory and advisory role is recommended. Similarly, other services providers are rarely engaged with the programmes, and it should be seen as an opportunity to promote other reliable partnerships in the areas of intervention.

In contrast, ISF works directly with communities, which certainly is the major strength of this approach. ISF is aware of the importance to shift from existing VWC to more transparent and

representative water user entities, and in consequence, it is assisting and promoting their prompt creation and legal register in the communities where it works.

Therefore, ISF approach has reached some encouraging indicators (mainly at village level) that provide some confidence that schemes will still be functioning in the long-term. In terms of replicability, nonetheless, the strong lead role of ISF and the lack of resources at District level can threaten these expected positive results.

The National Rural Water Supply and Sanitation Programme

As previously mentioned, the MoW has developed the NRWSSP as a major effort to improve the health and quality of life of the rural population by sustained and equitable access to safe water and sanitation. It is to be implemented in the next twenty-year period, and the main challenge is to achieve the ambitious national sector targets on a sustained basis.

The first step is to identify the gaps in service delivery (regional differences) and institutional capacity, and address them accordingly. In this respect, the gap can be caused (i) because of non existing water facilities in the considered area (non-delivery); (ii) because despite water schemes are in place, the national targets are not achieved (under-delivery); or (iii) because waterpoints exist but are under repair or no longer working (non-functionality). To tackle areas of non or under-delivery by increasing the number of schemes constructed, and deal with the problem of non-functionality, are different options with their own cost implications, and to identify the most cost-effective of these opportunities is thus required if the intervention is to be efficient. In particular, and because of the prevalent high rate of non-functional systems, a comprehensive study at national level to identify which are the main causes that lead systems to break down should be recommended, outlining appropriate remedial measures and developing tailor-made solutions accordingly.

The NRWSSP, nonetheless, will first focus on areas where the existing facilities are not enough to achieve the national targets in terms of services coverage (non or under-delivery), assuming the increasing pressure to .rapidly implement new schemes and achieve the targeted goals. It is true that to construct new schemes is much easier and faster than to build up recipient capacity to maintain them, but it would certainly be a significant mistake.

The Programme should focus on processes rather than on targets if it is to be sustained. Equally important, it should have the capacity to learn from errors, and to plan corrective actions on the basis of this experience. In a participatory learning-based approach, it should put into practice a continuous learning process based on capacity building gained through experience, where programmes evolve and grow, and are not simply designed and implemented.

To conclude, and to assist in the pursuit of sustainability, we make the following recommendations:

Management at the lowest appropriate level

- Assist and promote the shift from VWC to legally registered water user entities, ensuring that the process is to be transparent, democratic and representative (both women and vulnerable groups are included).
- Promote an effective and strong private sector, to satisfy specific services or skills that cannot be provided neither by the LGA nor by the community, and that are required for the project implementation.
- Build up capacities at district level, ensuring at least an adequate performance in the supervision of both ongoing and completed projects.
- Enhance the coordination between (at least) the three different levels of intervention: national, district and local; and if possible, with other key stakeholders (service providers, NGOs …).

Communities owning and managing their water schemes

- Increase the sense of ownership within the community over the water facility through a participatory approach (community participation, nonetheless, is essential but no enough to ensure long term benefits, and new models of permanent, evolving and improving service provision are thus needed).
- Explore, depending on the technology to be implemented and the context, new approaches to effectively involve the community while ensuring the appropriate management option.

Availability of spare parts and know how

- Ensure the availability of spare parts and qualified technicians at district level (by private supply agents, district spare parts outlets, and/or certified installation and repair technicians).
- Build up capacities at local and district level to pump attendants.
- Establish preventive maintenance schedules (which are currently neglected) and leak detection programmes where necessary.

Full cost recovery for operation and maintenance (O&M) of the scheme, as well as replacements

- Assist communities to correctly assess the appropriate payment for water, including at least ongoing operation, long-term maintenance, replacements and spare parts, subsidies to the poor, and recovery costs of the water scheme (amortization).
- Monitor the progress of the initial capital contribution that communities and LGAs are required to make. In case it represents a big burden for the poor, or it comes to be unrealistic, amendments to the NAWAPO should be advocated, and more efforts should thus be made to introduce effective and more realistic financial regulation of village water schemes.

The protection of water sources

- Promote an efficient Integrated Water Resources Management, and encourage the cooperation between key stakeholders (mainly the government, the Basin Office and the District).
- Optimize the use of water resources at village level, ensuring that local activities do not adversely affect the quality or quantity of water available to downstream users. Catchment management and source protection, while ensuring an efficient water use (discouraging wasteful use) should be essential activities to enhance the sustainability of the supply.

Balancing between technology, service level and the capacity of the beneficiaries

- Advocate for other definitions of service level (quality and quantity), which are in some cases both unachievable and unsustainable. The policy needs to be revised to better reflect the reality in the rural context.
- Raise awareness of the importance to prevent water from being contaminated by poor collection, transportation and handling practices before it is consumed.

The recognition of women as key players and the inclusion of the poor

- Ensure gender equity as a key criterion in the development of the management systems.
- Ensure that the most vulnerable members of the community are not priced out of the opportunity to access to safe water.
- Monitor the progress of the NWRSSP at district level, and its impact on equity of services (since the MoW is not required to follow up how the resources are allocated, there is the risk to provide WatSan services to more able communities and not address equity issues).

In consequence, there are several constraints which can threaten the long-term functionality of the schemes which are to be implemented through the NRWSSP. It is a mistake, nonetheless, to believe that it will not work. The Programme is in place, and the challenge is not only to achieve the national targets but to ensure that it is done on a sustained basis. It is certainly the biggest opportunity to address (at a national scale) issues such as water depletion, water scarcity and prevalence of water-related diseases, among others.

And there is thus no room for failure. Today, sustained rural water supply still remains an elusive goal in Tanzania.

REFERENCES

REFERENCES

- Abrams L. (1998) ***Understanding sustainability of local water services***, www.africanwater.org/sustainability.htm
- Addai, E. (2005) ***Sustainability of Water Projects: Lessons from Kitasse/Gyankama***, WaterAid Ghana.
- Cairncross, S.; Carruthers, I.; Curtis, D.; Feachem, R.; Bradley, D. and Baldwin, G. (1981) ***Evaluation for Village Water Supply Planning***, John Wiley & Sons, UK.
- Cairncross, S., Feachem, R. (1993, 2nd Edition). ***Environmental Health Engineering in the Tropics. An Introductory text***, West Sussex, Wiley.
- Cambridge Dictionaries (2005, 2nd Edition) ***Cambridge Advanced Learner's Dictionary***, Cambridge Dictionaries Online, www.dictionary.cambridge.org
- Carter R. C.; Tyrrel S. F. and Howsam P. (1996) **"Strategies for Handpump Water Supply Programmes in Less-Developed Countries"**, ***Journal of the Chartered Institution of Water and Environmental Management***, Vol 10, pp 130-136.
- Carter R. C.; Tyrrel S. F. and Howsam P. (1999) **"Impact and Sustainability of Community Water Supply and Sanitation Programmes in developing countries"**, ***Journal of the Chartered Institution of Water and Environmental Management***, Vol 13, pp 292-296.
- Debwa, D. et al (2005) ***End of Project Evaluation: The Singida WatSan Project***, WaterAid Tanzania.
- Drangert, J. (1993) ***Who Cares About Water? Household Water Development in Sukumaland, Tanzania***, Linkoping Studies in Arts and Science, Copenhagen.
- Government of Tanzania (1999) ***Development Vision 2025 for Tanzania***. Dar es Salaam, Tanzania.
- Government of Tanzania, MoW (2002) ***National Water Policy***. Dar es Salaam, Tanzania.
- Government of Tanzania, MoW (2006a) ***National Water Sector Development Strategy: 2005 – 2015)***. Dar es Salaam, Tanzania.
- Government of Tanzania, MoW (2006b) ***National Rural Water Supply and Sanitation Programme***. Dar es Salaam, Tanzania.

- Government of Tanzania, MoW (2007a) ***Water Sector Development Programme (2006 – 2025)***. Dar es Salaam, Tanzania.
- Government of Tanzania, MoW (2007b) ***Water Sector Development Programme (2006 – 2025): Programme Implementation Manual***. Dar es Salaam, Tanzania.
- Government of Tanzania, MoW (2007c) ***Water Sector Development Programme (2006 – 2025): Programme Operational Manual***. Dar es Salaam, Tanzania.
- Government of Tanzania, MoW (2007c, draft) ***Rural Water Supply and Sanitation Project. Report of the 8th Supervision Mission***. Dar es Salaam, Tanzania.
- Government of Tanzania. Vice President's Office (2005) ***National Strategy for Growth and Reduction of Poverty (NSGRP)***. Dar es Salaam, Tanzania.
- Gross, B.; Mukherjee, N. and Wijk, C. (2000) ***Linking Sustainability with Demand, Gender and Poverty: A study in community-managed water supply projects in 15 countries***, IRC – World Bank Water and Sanitation Program, The World Bank, Washington DC
- Harvey, P. and Reed, R. A. (2004) ***Rural water supply in Africa: Building blocks for handpump sustainability***, WEDC, Loughborough University, UK.
- Haysom, A. (2006) ***A study of the factors affecting sustainability of rural water supplies in Tanzania***, MSc. Thesis, Cranfield University, UK.
- Ingeniería Sin Fronteras – Tanzania (2006) ***ISF: Introductory Document***, ISF Tanzania.
- Ingeniería Sin Fronteras – Tanzania (2007, first draft) ***ISF: Operational Manual***, ISF Tanzania.
- Jarman, J. and Johnson, C. (1997) ***WAMMA: Empowerment in practice***, WaterAid Tanzania.
- Katz, T. and Sara, J. (1998) ***Making rural water supply sustainable: Recommendations from a global study***, UNDP – World Bank Water and Sanitation Program, The World Bank, Washington DC
- Lonholdt, J. (2005) ***Water and Wastewater Management in the Tropics***, IWA Publishing, UK.
- Mafuru, A. (2007) ***Moving from project to programme: A Case Study of the Experience from Mpwapwa District, in Dodoma Region***, The World Bank, Washington DC

- Mays, L. (2007) ***Water Resources Sustainability***, McGraw-Hill Inc – WEF Press, USA.
- Mukherjee, N. and Wijk, C. (2002) ***Sustainability Planning and Monitoring in Community Water Supply and Sanitation: A guide to the methodology for participatory assessment (MPA) for community-driven development programs***, Water and Sanitation Program, The World Bank, Washington DC
- Narayan, D. (1995) ***The Contribution of People's Participation: Evidence from 121 Rural Water Supply Projects***, The World Bank, Washington DC
- Owen, M. (2006, first draft) ***Water Supply in Dodoma Region: A status review for WaterAid Tanzania***, WaterAid Tanzania.
- Parry-Jones, S.; Reed, R. and Skinner, B. (2001) ***Sustainable Handpump Projects in Africa: A literature review***, WEDC, Loughborough University, UK.
- Skinner, B. (2003) ***Small-scale Water Supply: A Review of Technologies Water Resources Sustainability***, ITDG Publishing, London
- Smet, J. and Wijk, C. (2002). ***Small Community Water Supplies: Technology, people and partnership***, IRC International and Sanitation Centre, Delft (The Netherlands).
- Sugden, S. (2003) ***Indicators for the water sector: examples from Malawi***, WaterAid Malawi.
- The World Bank (2000) ***Country Assistance Strategy for the United Republic of Tanzania***, Country Department for Tanzania, The World Bank.
- The World Bank (2002) ***Project Appraisal Document 22.875-Tz: Rural Water Supply and Sanitation Project***, Tanzania and Uganda Country Department, The World Bank.
- The World Bank (2003) ***Project Appraisal Document 25.249-Tz: Dar es Salaam Water Supply and Sanitation Project***, Tanzania and Uganda Country Department, The World Bank.
- The World Bank (2004) ***Implementation Completion Report 30.929-Tz: River Basin Management and Smallholder Irrigation Improvement Project***, Africa Region, The World Bank.
- The World Bank (2005) ***Implementation Completion Report 32.225-Tz: Urban Sector Rehabilitation Project***, Africa Region, The World Bank.

- The World Bank (2007a) ***Project Appraisal Document 37.385-Tz: Water Sector Support Project***, Tanzania and Uganda Country Department, The World Bank.
- The World Bank – Government of Tanzania (2007b) ***Joint Assistance Strategy for the United Republic of Tanzania***, The World Bank – Government of Tanzania.
- Therkildsen, O. (1988). ***Watering White Elephants? Lessons from Donors Funded Planning and Implementation of Rural Water Supplies in Tanzania***, Centre for Development Research, Copenhagen.
- WaterAid (2001) ***Looking back: The long-term impacts of water and sanitation projects***, WaterAid, UK.
- WaterAid (2006) ***Technology notes***, WaterAid, UK.
- WaterAid - Tanzania (2002) ***Water and Sanitation in Tanzania: Poverty Monitoring for the sector using national surveys***, WaterAid Tanzania.
- WaterAid - Tanzania (2005a) ***WaterAid Tanzania: Country Strategy 2005 - 2010***, WaterAid Tanzania.
- WaterAid - Tanzania (2005b) ***Water and Sanitation in Tanzania: An update based on 2002 Population and Housing Census***, WaterAid Tanzania.
- WaterAid - Tanzania (2006) ***Project Operational Manual***, WaterAid Tanzania.
- WaterAid – Water Policy Programme (2005) ***Learning for Advocacy and Best Practice – WaterAid Water Point Mapping. Report of findings based on country visits to Malawi and Tanzania***, WaterAid, London.
- WELL (1998) ***DFID Guidance manual on water supply and sanitation programmes***, WELL, WEDC, Loughborough University, UK, www.lboro.ac.uk/well
- World Health Organisation (2004, 3rd Edition) ***Guidelines for Drinking-water Quality. Volume 1 Recommendations***, WHO Library, Geneva.
- Zvikomborero, H. and Hertle, J. (2006). **"An evaluation of the sustainability of rural rehabilitation project in Zimbabwe "**, ***Physics and Chemistry of the Earth***, Vol 31, pp 699-706.

ANNEXES

ANNEXES

In electronic format:

Annex A: List of interventions and data of all different projects implemented by WA

Annex B: List of interventions and data of all different projects implemented by WB

Annex C: List of interventions and data of all different projects implemented by ISF

Annex D: Standards of Quality of Domestic Water in Tanzania