

Operation and Maintenance of Rural Water Supplies in Malawi

Study Findings

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“Water for All, Always”

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List of Abbreviations

ADC	Area Development Committees
AM	Area Mechanic
BHS	Borehole Supervisor
CBM	Community Based Maintenance
CBO	Community Based Organisation
DA	District Assembly
DCT	District Coordination Team
DEC	District Executive Committee
DHS	Demographic Health Survey
DRA	Demand Responsive Approach
DSIP	District Strategy and Investment Plan
FSP	Facilitation Service Provider
FT	Facilitation Team
GFS	Gravity Fed Scheme
GoM	Government of Malawi
GVH	Group Village Headman
HSA	Health Surveillance Assistant
JMP	Joint Monitoring Programme (of UNICEF and WHO)
JSR	Joint Sector Review
MoIWD	Ministry of Irrigation and Water Development
O&M	Operation and Maintenance
ORT	Other Recurrent Transactions
RWB	Regional Water Board
RWS	Rural Water Supply
SWAp	Sector Wide Approach for planning
TA	Traditional Authority
TSP	Technical Service Provider
VDC	Village Development Committee
VHWC	Village Health and Water Committee
VWC	Village Water Committee
WMA	Water Monitoring Assistant
WPM	Water Point Mapping

Exchange rate: \$1 =145 MWK

Definitions

Access to safe water is defined by MoIWD as people with a minimum quantity of 36 litres per capita per day within a maximum distance of 500 meters. Access is measured by assuming that a borehole serves a population of 250 people while a communal standpipe serves 120 people. Shallow wells are not considered as safe water points.

Coverage (rural) is defined as total number of water points (both functional and non-functional) multiplied by the respective standard served population figure, and divided by the total rural population.

Functionality is the number of working water points in a specified area such as Traditional Authority (TA) or District or national (minimum flow of 0.2 l/s from a water point).

Potable water means water, which is free from disease-causing organisms, harmful chemical substances, and radioactive matter, tastes good, is aesthetically appealing and free from objectionable colour or odour.

Water quality is defined by analyzing it in terms of its (a) **Chemical Content:** Hardness (calcium & magnesium), metals (iron etc), nutrients (nitrogen and phosphorus), chloride, sodium and organic compounds; (b) **Physical content:** turbidity, colour and odour; and (c) **Biological Content:** Faecal coliform, total coliform, viruses etc.

Operation means the safe, reliable and economic use of a facility over its **Life Span**. The **Life Span** of a system is the number of years that the facilities are expected to operate. This can be 10 to 100 years.

Sustainability, in the general sense, is the capacity to maintain a certain process or state indefinitely. In the context of safe water provision, it refers to the indefinitely continued functioning of water facilities, i.e. it includes O&M and eventual renewal of facilities.

Maintenance describes the set of measures and activities aimed at keeping, or restoring optimal and reliable functionality of equipment, and sustaining and protecting natural resources.

- **Preventive maintenance** means measures that are taken before major problems and disturbances like breakdowns occur. Preventive maintenance is the most reliable and economic maintenance strategy to adopt. It requires a qualified local maintenance structure and skilled personnel.
- **Curative maintenance** means a reaction to a problem such as a breakdown or reduced supply. Similarities can be seen between the water supply and in the health sector: "Prevention is better than cure". Curative maintenance is expensive and can lead to long interruptions of service.

Rehabilitation is the renovation or replacement of major structures, which have reached the end of their useful life. Rehabilitation and extension of existing systems should be treated as new projects.

Executive Summary

This report describes the findings of an O&M study in Malawi, undertaken in November 2008. The report is accompanied by a sister document explaining a proposed framework for O&M and recommending actions to establish the system.

The study team reviewed relevant documentation, followed by three weeks of fieldwork in Malawi. Visits were made to 15 Districts in all three regions of Malawi. The consultants were accompanied by MoIWD staff. Consultations were held with over 80 stakeholders

Community Based Maintenance: Malawi subscribes to CBM. Presently the communities are “empowered” to take care of their water facilities. The VWC do not receive any substantial support from the government. The MoIWD does not have a dedicated budget line for O&M. Some NGOs support the VWC by training Area Mechanics others leave the villagers completely to their own devices. District Assemblies execute rehabilitation programme when funding is available. It is difficult to prioritise O&M given that financial resources are so limited.

Investment: Financing of the sector has not been well coordinated, with implementation taking place in discrete and fragmented projects. It is envisaged that the SWAp, together with NWDP II will improve this.

- About 0.21 million rural people per year need to be provided with services at an annual cost of USD 8.28 million (USD 40 per capita)
- The Investment Planning for Rural Water Supply estimates a total investment requirement of USD 193 million to reach 98% coverage in 2025.
- A succinct overview of resources is currently not possible.

It makes economic sense to manage these assets.

If annually 5% of the capital investment is spent on O&M, an average of USD 12 million yearly is needed. This cost would be shared between water users, Government and other service providers. However, currently, Districts are not even able to invest a twentieth of that amount.

It is anticipated that the adoption of the integrated financial management system (IFMS) at District level will eventually provide a clear overview of financial resources and expenditure.

Monitoring and Evaluation: Little emphasis is foreseen to include O&M. Since the JSR 2008 includes an undertaking to formulate an O&M framework the aspect of O&M will be included in future.

Access and Functionality of Rural Water Supplies: Access to safe water is estimated to be 75% in 2007. Low functionality of 31% for handpumps and 49% for GFS reduces the effective coverage to 55%. Unless significant efforts are taken to bring broken-down boreholes back into operation and ensure that existing boreholes are properly maintained, investments in new boreholes are not going to raise coverage further. The GoM has set a target to reduce the proportion of non-functional water points from 31% to 25% by 2011.

District Assembly and District Water Office: Malawi commenced decentralisation in 1999; there is still a long way to go in terms of availability of resources and capacities at district level. District Water

Offices are grossly understaffed and poorly equipped. Many District Water Officers lack experience and are hardly given any support. The lack of transport, low staff numbers, and poor resources means that the support to O&M is negligible.

Coordination: DWO heavily criticised the central Ministry for drilling boreholes, and not informing them of the work. The RWO complained that the DWO do not relate data to them and vice versa. NGOs work in isolation and do not provide information of their plans or outputs. However, some NGOs request District Government staff to undertake CBM training for them. A clear policy in terms of NGO/CBO work plan approval by District Assembly is essential. This should include a signed agreement between the two organisations setting out roles and responsibilities, standards to be followed as well as joint planning and reporting requirements.

Technology Choice: Piped water supplies and boreholes with handpumps are the preferred technologies. Technology choice is often donor driven.

Construction Quality and Supervision: There is a lack of hydro geologists; drilling supervision is undertaken by communities after a day or two CBM1 training. Construction quality of boreholes is often questionable (lack of water, dry after a few months, no sanitary seal). It is not clear how many of the dysfunctional boreholes are not working because of poor drilling, siting and construction workmanship. Widespread borehole drilling has taken place without a groundwater resource assessment.

Community Based Maintenance (CBM): CBM training is an essential part of providing users with the requisite skills and knowledge to manage and maintain their facilities. Although Government stakeholders (WMA and BHS) seemed to be familiar with CBM training, training manuals, materials and visual aids were not easy to obtain in the Districts. The mission team did not find an English version of the CBM manual. There is a need to reprint and disseminate overhauled CBM materials on a wide scale

There was a perception that initial training is enough, refresher courses are unknown. Numerous, as much as 40%, of the communities have never received CBM training. NGOs normally delegate the CBM training to the DWO staff. VWC members do not receive a documentation that would allow them to refer to the training later.

Community Contributions: DRA policies stipulate that communities are supposed to collect MWK 15,000 and put it onto a bank account as O&M fund. In reality, practices differ: some communities contribute in kind as well as cash. Some projects encourage purchasing spares, some organisations provide communities with free starter packs.

The differences in approach are also due to different attitudes by sector professionals, some of whom do not think that users can afford to contribute: “they are too poor”!

Vandalism and Theft: Vandalism of rural water supplies occurs throughout but there is no comprehensive data on the extent of the problem. Thieves come in the night and steal various components. Whoever vandalises handpumps clearly knows how to dismantle them. Pumps that are distant from the village are more at risk.

Politics: Provision of water is a political campaigning tool. Before elections, politicians promise their constituency quick access and sometimes even free water.

Piped Water Supplies

GFS are in a sorry state. GFS vary in size and complexity. Usually they serve more than one village. GFS suffer from environmental degradation in the catchment areas as rivers that used to be perennial now run dry.

GFS management and maintenance was the duty of a Government employed water assistant, nowadays running the scheme is under community management. Every GFS tap is supposed to have a tap committee. Sometimes branch committees are formed and a main committee is responsible for the intake, tanks, break pressure tanks and treatment plant. All members on these committees are non-paid volunteers. They lack technical understanding and managerial capacity and have no fall-back organisation to ask for support.

MoIWD is piloting a new model in co-operation with AfDB and WaterAid whereby the schemes are managed by a Water User Association. It is the intention that the WUA will employ a local operator.

Spare parts (other than taps) are not available for piped water supplies.

Boreholes with Handpumps

Standardisation: Malawi has adopted and more or less adhered to a standardisation policy for handpumps. This has a vital effect on the sustainability. This policy has helped to keep the functionality at the present level. The standard pumps are Afridev and Malda. Both pumps are strong and sturdy.

Marion Medical Foundation installs the Mark V. An estimated 6,000 pumps have been installed mainly in the north.

Climax Pumps and India II were used in the past. Elephant Pump and Canzee Pump have been piloted. Tests to introduce new equipment should be endorsed by MoIWD. New designs should be rigorously tested and monitored. Only if the trials are successful the design can be considered for adoption.

Handpump maintenance: A VWC, usually comprising ten members, is expected to manage the handpump O&M. The VWC should collect money, but this is rarely done. Communities raise money when the pump has broken down. Minor repairs should be undertaken by the community and major repairs by the Government. No written definition exists. Many villagers consider Government responsible for repairs.

Most boreholes maintenance is actually undertaken by the Government. The borehole maintenance programme of 2007 was not in line with the CBM policy. Water users are given mixed messages about who is responsible for maintenance and repair.

Spare parts: Handpumps can be imported free of duty whereas spare parts are subject to import duties and sales tax. This reduces the cost of rehabilitation and increases the cost of repairs.

Area Mechanics rely on the community to buy the spares. Afridev spares are available in most Districts, but no Malda spare parts. Since the late 1980ties, 77 Chipiku stores sell fast moving spares for Afridev Pumps. In the Central region, Inter aide started setting up spare part outlets that sell Afridev spares in addition to the Chipiku stores. Spare parts for Malda pumps are not available. The NGOs, which buy these pumps, never bothered setting up a supply chain.

Large, expensive components are not kept in the local stores. It might take several weeks before such a component can be located in the country. In addition, communities first have to raise the funds before the part can be ordered.

Spares dealers, including Chipiku, perceive the stocking of spares as a social rather than a commercial activity. Spare part prices vary considerably. For example, stainless steel rods cost between MWK 2,780 and 4,700.

There is no consistent approach as to whether spares are sold or given away. Some NGOs provide free spares as they consider people too poor. Free spares undermine the involvement of the private sector in the supply chain.

Area Mechanics: Inter aide and Badea have been training and monitoring Area Mechanics to maintain and repair boreholes. Preliminary results are encouraging. AM are being paid by communities to repair their handpumps. However without that support, AM face challenges, some communities are reluctant to pay, they have to travel long distances, and are not always given a bicycle. Many Districts also repair boreholes, providing free labour and spares, without a clear distinction of what is AM work and what is Government responsibility.

Conclusions

Malawi has made remarkable progress in safe water supplies, with access figures significantly higher than neighbouring countries. Investments in rural water supplies over the last 30 years have been substantial. It has standardised on good quality handpumps. Spare parts of the Afridev pump are available through the Chipiku chain stores. In some parts of the country, AM are undertaking maintenance and repair of pumps for communities, at a fee. The CBM concept is widely accepted by most key stakeholders, although its implementation varies considerably.

Non-functionality of 31% of water supplies is considered unacceptable by the GoM. It is recognised that the inadequate and inconsistent O&M is a major problem. This recognition is the first step on the long journey of establishing a comprehensive national approach to O&M. The agreement of an undertaking at the 2008 Joint Sector Review to establish an O&M framework is another step in the right direction.

There is an urgent need for all organisations in sector to have a common approach to O&M in the form of an O&M framework. **It is essential that all organisations comply with this framework.** The country can no longer afford to allow NGOs undertaking projects with widely different approaches. Sector reforms and decentralisation are not easy transitions but offer an opportunity. The move towards a SWAp provides an opportune vehicle for establishing a comprehensive O&M framework.

Capacities in most of the DWO are inadequate for the work that needs to be done. A strong and effective O&M system needs to be embedded at District level. This requires extensive measures to elevate and maintain DWO capacity.

All water sector providers need to agree on shared roles and responsibilities in a comprehensive O&M framework. Malawi has to break out of the cycle of “*new facility-disrepair-rehabilitation*”, instead, a new paradigm, based on the premise that **prevention is better than cure** needs to take root.

Malawi can significantly improve the functionality of its rural water supplies if a good O&M framework is developed and championed by the MoIWD.

1. Introduction

Malawi is a relatively small, landlocked country in southern Africa, which prides itself in being *the Warm Heart of Africa*. It is flanked by the expanse of Lake Malawi along much of its eastern border and is surrounded by Tanzania, Zambia and Mozambique. Since independence in 1964, Malawi has had peace and stability. Malawi has an estimated population of 13.2 million, of which 80% live in rural areas and generally practice subsistence, rain-fed agriculture.

Malawi is part of the Great Rift Valley, with 75% of the land surface between 750 m and 1,350 m above sea level. Highland elevations are to over 2,400m and the lowest point on the southern border is 37 m (Figure 1.1). Most of the country receives between 760-1,150 mm of rainfall per annum. Mulanje, Nkhata Bay and the northern end of Lake Malawi receive precipitation over 1,500 mm. Almost 90% of rainfall occurs from December to March, with no rain at all between May to October over most of the country (FAO, 2008).

The Gross National Income Per Capita (GNI) is USD 160; under-five mortality (per 1,000 live births) is 133 (UNICEF, 2005). Malawi is one of the few countries in Africa on target to reduce the under-5 mortality rate by two thirds by 2015 (UNDP, 2007). The HIV/AIDS prevalence rate of 14.1% in the country has caused extensive loss of productive and qualified human resources (UNICEF, 2005).

The Government of Malawi (GoM) is embarking on the development of a Sector Wide Approach (SWAp) for planning, implementation, monitoring and evaluation for water and sanitation, as well as other sectors. The GoM through the Ministry of Irrigation and Water Development (MoIWD) has developed a second National Water Development Programme (NWDPII), which aims at building capacity of key stakeholders; improving access to potable water and improved sanitation facilities; creating effective management structures for piped water supply systems; improving support systems for regulation and monitoring; and strengthening coordination in the water and sanitation sector. The GoM is also going through a process of decentralisation, with increased autonomy being handed over to the 29 District Assemblies for planning, implementation of service delivery, and monitoring and evaluation.

The main improved rural water supplies in Malawi are boreholes installed with handpumps, shallow wells fitted with handpumps and piped gravity fed schemes (GFS). Unimproved sources comprise unprotected springs, streams, rivers and shallow open wells. Coverage of improved water supplies in rural Malawi is estimated to be 71% (UNICEF, 2006b), which is reasonably high for the region (put side by side with its neighbours this compares favourable: Tanzania 46%, Mozambique 26%, and



Figure.1 Malawi Topographic Map

Zambia 41% (WHO/UNICEF 2006 JMP Data). However, it is estimated that 31% of the improved rural water points are not functioning, thus effective coverage is reduced to 55%¹.

The GoM has set a target to reduce the proportion of non-functional water points in rural areas from 31% to 25% by 2011 (MoIWD, 2008a). In line with this, there has been recognition that significant efforts need to be made to harmonise the wide range of approaches to operation and maintenance of rural water supplies that are being followed in Malawi. Further, there is need for significantly improved access to spare parts by water users. In addition, concerns have been documented regarding untrained water point committees (VWC); the quality of maintenance services and spare parts; inadequate financing mechanisms; lack of capacity to manage and undertake repairs which are beyond the capacity of local communities (see, e.g. Rural Water Supplies Sector Investment Programme, MoIWD, 2008))

This report gives an account of the findings of a short study of the operation and maintenance of rural water supplies in Malawi, undertaken in November 2008. The report is accompanied by a sister document setting out a proposed framework for an operation and maintenance system and recommending actions to fully establish this system.

1 Objective

The overall objective of the work was to support the Malawi water and sanitation sector in the development of an operation and maintenance framework for the rural water supply sub-sector. The framework will harmonise the existing discreet project-based O&M systems currently under implementation in the country and in doing so, support the Government in the implementation of its decision to adopt sector wide approaches to development. Annex 5 provides the Terms of Reference for the work.

2 Methodology

The study was undertaken by a team of two consultants from Skat Foundation, Mr Erich Baumann and Dr Kerstin Danert. A desk review of relevant documentation was done, followed by three weeks of fieldwork in Malawi. Visits were made to 15 Districts in all three regions of Malawi (Figure 2).

The two consultants both undertook consultations in the central region for week one. For the second week, Erich Baumann travelled to the southern region and Kerstin Danert to the northern region. The final week of consultations in Lilongwe provided the team with considerable feedback on the field findings and provided the opportunity for discussions on key aspects of the proposed O&M framework and action plan. The consultants were accompanied by Mr Thanasius Sitoro of MoIWD for the first two weeks of the field work (central and northern region) and Ms Tamara Zembeni in the southern region and Mr Josef Mapwesera (RWO) in the southern region.

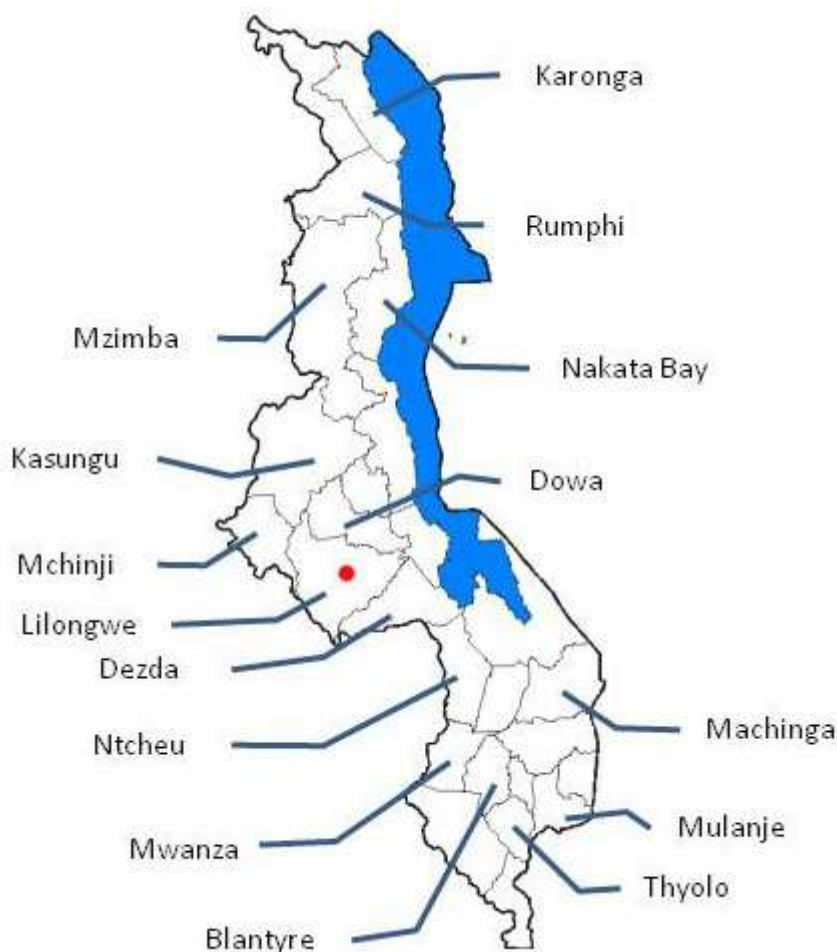
Consultations were held with over 80 stakeholders comprising water users, area mechanics, water user committees and association representatives, District Water Office staff, NGO and CBO staff,

¹ Assuming that 19,404 out of 24,679 handpumps (serving 250 people each) are functional and 6,050 out of 12,456 taps (serving 120 people each) are functional. Rural Population is 10,174, 802.

representatives from District Assemblies, private sector companies (suppliers of spare parts, drillers), MoIWD at regional and central level and development partner representatives.

Note that in the TOR, it was planned to hold four consultation meetings. At the start of the visit, it was agreed that these meetings would not be conducted, and that rather one-to-one and small group discussions would take place instead. It was agreed that a wider consensus-building meeting could be held in the first quarter of 2009, once stakeholders had time to digest the study findings, proposed framework and action plan.

Figure 2 Districts Visited for Field Work and Consultations



3 Rural Water Development Context

3.1 Key Policies, Strategies and Objectives

The “*Malawi Growth and Development Strategy (MGDS)*” provides an overarching national development framework for the attainment of Malawi’s vision 2020. It aims to reduce poverty through sustained economic growth and infrastructure development and runs from 2006 to 2011. The MGDS focuses on six priority areas, one of which is irrigation and water development. Progress is reported upon annually against a set of MDGS outcome indicators and/or sector outputs.

The sector is governed by the National Water Policy (2005), National Sanitation Policy (2008), National Irrigation Policy (2000), National Environmental Policy (2004), Water Resources Act (1969), Waterworks Act (1995) and Environmental Management Act (1996); and supported by the Gender Policy (2000), Decentralisation Policy (1998) and Local Government Act (1998). Currently, there are efforts being made to develop the Water Supply and Sanitation Services Act and Water Boards Compensation Act and to develop a regulatory framework.

The National Water Policy (2005) follows Vision 2020:

“Water and Sanitation for All, Always”

The overall (water) policy goal is *sustainable management and utilisation of water resources in order to provide water services of acceptable quality and sufficient quantities that satisfy the requirements of every Malawian and enhance the countries natural ecosystem*. The water policy encourages active participation of local service providers in water and sanitation, according to set standards for conservation, management, development, provision and use of water resources and disposal of wastewater.

The overall objective of the rural water supplies sub-sector is to ***“achieve sustainable provision of community owned and managed water supply services that are equitably accessible to and used by individuals and entrepreneurs in rural communities for socio-economic development at an affordable cost”*** (MoIWD, 2008a). The specific objectives are:

- Increase access of potable water to 80% by 2011
- Reduce non-functional water points from 31% to 25% by 2011.

3.2 Stakeholders and Roles

The Ministry of Irrigation and Water Development (MoIWD) is the lead agency in the water and sanitation sector, responsible for guiding programme implementation through policy formation, legislation and regulation. It has been recognised that there is inadequate human resource capacity within MoIWD to deal with the changing roles. In 2008, the vacancy rate in MoIWD was 66% for core staff and 22% for support staff respectively.

The Blantyre and Lilongwe Water Board are responsible for urban water supply in the respective urban centres. Regional Water Boards (RWBs), i.e. Northern, Southern and Central are responsible for provision of potable water in the towns. Supplies are primarily piped water systems abstracted from boreholes, with a few towns benefiting from gravity-fed piped schemes. Water supplies for market centres are still at the planning stage. Point source construction is implemented through District structures, as well as by the regional water offices and the central MoIWD. Construction of piped water supplies is through urban and regional water boards and District structures.

The private sector implements projects, provides services, invests and utilises water resources, however they have to operate under poor regulatory mechanisms. NGOs and civil society initiate and implement projects, and undertake public awareness and advocacy activities. Beneficiaries demand services and are involved in planning, construction supervision, operation and maintenance, and management of the facilities.

Overall institutional capacity has been fragmented and the sector has been not well coordinated (MoIWD, 2008) but it is envisaged that these will improve as part of the SWAp. In terms of coordination at national level, the WES Group (comprising Government, NGO and donor

representatives and chaired by the principal secretary), and Water and Environmental Sanitation (WES) Donor Aid Coordination Group each meet on a monthly basis. The First Annual Joint Sector Review was held in December 2008. Plans are being made to establish a national water and sanitation NGO network or association. Box 4.1 outlines the planned framework for sector coordination in rural water supplies.

Box 1 Framework for sector coordination in rural water supplies (Source: MoIWD, 2008a; pp17)

At **community level**, coordination is undertaken by the Area Development Committee (ADC), which partners with traditional leaders, area executive committees (extension workers) and community-based organisations. Decisions taken by the ADC are sent to the District for consideration.

At **district level**, the District Executive Committee (DEC), comprising all sector heads and NGO representatives in the district, is to provide technical guidance on the implementation of rural water supply activities. The District Coordination Team (DCT) plans, organises, implements, monitors and evaluates programmes under the leadership of the Director of Planning and Development although it has been observed there Director of Public Works and should play a meaningful role in the DCT (MoIWD, 2008a pp 17).

The Regional Water Development Officer coordinates RWS activities at **regional level**, provides technical guidance and fills capacity gaps at district level.

National level coordination of RWS is the responsibility of MoIWD. It is expected that a task force, through its action group will provide necessary support.

It is noted that while Water and Sanitation Committees can manage water point sources, more professional arrangements (such as a small water utility/water user association/trust plus an operator) are needed for rural piped systems. It has been recognised that such arrangements would require more professional support (MoIWD, 2008a; pp11).

3.3 Programmes and Projects

Provision of improved rural water supplies in Malawi commenced in 1968 with the Malawi Piped Scheme Programme. Construction of a small gravity piped scheme was followed by a larger scheme. By 1980, 32 schemes had been constructed (design population 640,000), and by 1988 a total of 63 schemes had been completed or were under construction (design population 1.5 million)² (Kleemeier 2000). However, from 1989 onwards, the program retracted as USAID support reduced. The National Water Development Project I (1995 to 2003)³ invested in water supply and sanitation infrastructure and community develop and also acted as an instrument for implementing sector reforms and institutional restructuring.

At the time of preparing this report, there was no document providing an overview of all the rural water development projects and programmes or outputs. Information remains in project reports. According to all District Water Offices, there is lack of reporting to them by most NGOs and by some central MoIWD projects. In addition, boreholes drilled under the Constituency Development Fund, or financed through the District Assemblies are not always reported to the District Water Office. Table

² Donors included Christian Service Committee, UNICEF, OXFAM, Denmark, Canada, GoM, IDA, Nordic Development Fund and Norway

³ Co financed by Government of Malawi, the International Development Association (IDA) of the World Bank, the Nordic Development Fund and the Norwegian Government.

4.1 is an attempt to summarise the fragmented information available regarding the ten main ongoing water development projects in Malawi that incorporate rural water supplies.

It is envisaged that all water development projects will fall under the umbrella of the second National Water Development Programme (NWDP II) but this process is still ongoing, and there is currently a certain amount of overlap between the National Water Development Programme and the National Water Development Project (II). A key milestone in the introduction of a national operation and maintenance system will be ensuring that there is a common understanding of the framework within all of these projects, and that they adhere to common guidelines.

Synthesising NGO and CBO investments and outputs in the rural water and sanitation is currently not possible. However, WaterAid (2005; pp 8) estimates three-quarters of all water points in the country were installed by “*unknown or unmonitored*” organisations. The consultancy team found 31 NGOs undertaking activities in rural water supply service delivery (Table 4.2) although it should be noted that this list is by no means comprehensive. There are a few NGOS (such as WaterAid, Plan, Inter aide and Concern) which are trying to support Government e.g. in mapping and supporting maintenance of rural water supplies.

Table 1 Overview of Current Key Rural Water Development Projects in Malawi⁴

Programme/Project	Description	Dates	Funding	Funders
National Water Development Programme	Five components: A. Urban Water Supply and Sanitation B. Town, Market Centre and surrounding villages piped water and sanitation C. Water Resources Management D. Sector Management and Urban Reform E. Rural Water Supply and Sanitation (Piped and Point Water Sources) as set out in District Annual Work Plans. Three Districts will be supported.	2007–2012 2008-2011	USD 12m USD 25m	World Bank, GoM and World Bank (Africa Catalytic Growth Fund)
National Water Development Project (NWDP II)	Overlap with above programme			World Bank
Water Sanitation and Hygiene Project (WASH)	Covers 12 Districts in Malawi	2007-2013		UNICEF (with Netherlands funding)
Project for Groundwater Development in Lilongwe West	Deep borehole drilling and handpump installation	Not known	USD 6m	JICA
<i>Title not clear</i>	<i>Information not readily available</i>			DFID
Malawi Social Action Fund (MASAF)	Community applies for infrastructure development (including improved water supplies)			World Bank
Integrated Rural Water Supply for Ntchisi and Mzimba	Role model with respect to participation of District Assemblies and Communities).	2005-2008		AFDB
Infrastructure Services Project (ISP) by MPED	Project run under the Ministry of Planning and Economic Development (MPED). Includes telecommunications, energy generation and supply,	2006-2011	USD41m (total)	World Bank

⁴ Source (Project documents as available, stakeholder interviews and search on website:

<http://aida.developmentgateway.org/aida/SearchRouter.do?frame=1§orSelected=8200&countrySelected=MWI&count=1&SearchPrompt=N&type=Simple&sortBy=iso3&countrySelectedValues=Malawi§orSelectedValues=Water%20Supply%20and%20Sanitation>

	government administration, rail transport and water supply and sanitation.)		
Ta Ganya Water Supply and Sanitation Project	Water supply and sanitation – small systems	2003-2010	EU
Safe Water and Sanitation Provision	Administration and water resources management	2006-2011	DFID
<i>Second Africa Development Programme Project (Title not clear)</i>	Covers the four Districts of Lilongwe, Machinga, Zomba and Mulanje		AFDB
Constituency Development Fund			

Table 2 List of NGOs Operating in Rural Water Supplies in Malawi (n.b. there may be more)

	Name of NGO		Name of NGO
1	Action Aid	16	Fresh Water Project
2	Anglican Church	17	Inter aide
3	ADRA	19	Malawi Red Cross
4	Assemblies of God	20	Marion Medical Mission
5	Baseda	21	Millennium Challenge
6	CARD	22	Oxfam
18	Catholic Development Commission in Malawi (CADECOM)	23	Plan International
7	Catholic Relief Services (CRS)	24	Plan Malawi
8	Church of Central African Presbyterian (CCAP) North	25	Pump Aid
9	Church of Central African Presbyterian (CCAP) Livingstonia	26	Save the Children
10	Clinton Hunter Foundation	27	Tannard
11	Concern International	28	Water for People
12	Concern Universal	29	WaterAid
13	CPAR	30	Work for Rural Health
14	DAPP	31	World Vision International
15	Evangelical Lutheran Development Service (EVDS)		

3.4 Community Based Maintenance

The National Water Policy and the Decentralisation Policy place responsibility for Rural Water Supply to Communities and their District Assemblies. It is envisaged that each District will have its own Rural Water Supply sub-program and the community will manage their own water facilities (MoIWD, 2008a; pp11).

Presently the communities are “**empowered**” to take care of their water facilities. During the Community Based Maintenance (CBM) training, they are advised to take ownership of the water points and that the responsibility for operation and maintenance (O&M) remains within the village water committee (VWC). The VWC do not receive any substantial support from the government. Some NGOs support the VWC by training Area Mechanics others leave the villagers completely to their own devices. **The MoIWD does not have a dedicated budget line for O&M.** District Assemblies execute rehabilitation programme when funding is available.

3.5 Investment

MoIWD (2008) state that financing of the sector has not been well coordinated, with implementation taking place in discrete and fragmented projects with different objectives and conditionalities. It is envisaged that the SWAp, together with NWDP II will improve this.

A number of documents set out investment requirements for new rural water supply infrastructure:

- It is estimated that about 0.21 million rural people per year need to be provided with services at an annual cost of USD 8.28 million (USD 40 per capita).
- The Investment Planning for Rural Water Supply and Sanitation (MoIWD, 2008) estimates a total investment requirement of USD 193 million to reach 98% coverage in 2025 (Table 3).

Table 3 Rural Water Supply and Sanitation Investment Requirement

PHASE	Investment
Phase 1 (2007 – 2010)	USD 41,439,642
Phase 2 (2011 – 2015) MDGs requirement	USD 60,333,970
Sub-Total for MDGs	USD 101,773,612
Phase 3 (2016 – 2020)	USD 45,165,783
Phase 4 (2016 – 2020) Full coverage	USD 46,477,079
Sub-Total full coverage	USD 91,642,862
Total Investment	USD 193,416,474

Analysis of the various investment scenarios shows that they all lack realistic figures on the investment needed for O&M. It is estimated that there are some 25,000 boreholes fitted with handpumps as well as about 12,500 GFS taps in Malawi. This equates to a capital investment of MWK 24.65 billion (USD 170 million)⁵ in rural water supplies already.

It makes economic sense to manage these assets.

Discussions with MoIWD revealed that Government has no budget for O&M. The only investments that are currently being made are for rehabilitation. However, waiting until a facility is completely

⁵ This assumes that each borehole costs MWK 725,000 (USD 5,000) and each GFS tap costs MWK 552,000 (USD 3,600)

broken down before investing in its replacement is not cost effective. A water supply facility (like any other equipment) requires regular maintenance and repair. Although Malawi subscribes to a Community Based Maintenance (CBM) System, this cannot be expected to function without external support of some sort. The subsequent sections of the report examine CBM, and support requirements in more detail. It is clearly very difficult to prioritise O&M given that financial resources are so limited. However, there is an urgent need for recognition that investing in the management of Malawi’s existing rural water supply assets is a priority for the State, development partners and other service providers as well as the water users themselves.

Figure 3 provides an estimate for investment requirements for new facilities and in order to maintain Malawi’s growing rural water supply assets. It assumes that 5% per year of the capital investment is spent on O&M. In this scenario, from 2015 onwards the expenditure for supporting O&M is more than for building new infrastructure. On average, O&M investment within a District would be MKK 58 million (USD 400,000). Note that this investment would be shared between water users, Government and other service provides. However, currently, Districts are not even able to invest a twentieth of that amount. Table 4 shows the Other Recurrent Transactions (ORT) funding for a select number of District Water Offices. ORT funds are used to pay for electricity, water, stationary, fuel and other District Water Office running costs, and O&M. Current allocations do not enable many activities to be undertaken. Sometimes the District Water Office receives money from District Assemblies for repairs.

Figure 3 Malawi Rural Water Supplies: Projected Investment in New Infrastructure and O&M (5%)

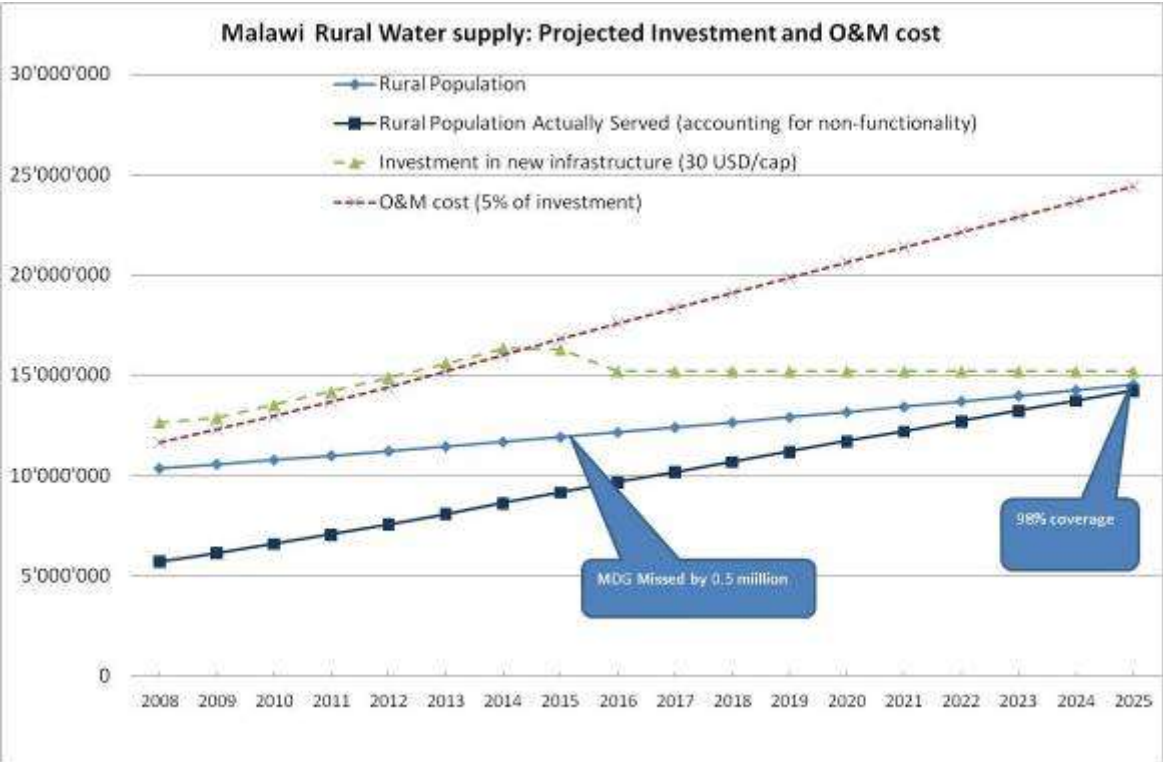


Table 4 District Water Office Other Recurrent Transactions (ORT) Funds

District	per month	per year	
	MWK	MWK	USD
Dedza	76,000	912,000	USD 6,290
Ntcheu	56,000	672,000	USD 4,634
Karonga	122,000	1,464,000	USD 10,097
Rumphi	52,000	624,000	USD 4,303
Nkhata-Bay	106,721	1,280,652	USD 8,832
Blantyre	106,000	1,272,000	USD 8,772
Thyolo	106,000	1,272,000	USD 8,772
Mulanje	106,000	1,272,000	USD 8,772
Mwanza	103,000	1,236,000	USD 8,524
Machinga	97,000 - 104,000	~1,200,000	USD 8,275

District Strategy and Investment Plans (DSIPs) for Rural Water Supplies, covering the period 2008 to 2015 have been prepared by 12 Districts, and more are in the pipeline. According to MPED (2008), all Districts have approved District Development Plans in place, which also include water supply investments, although not in as much detail as in the DSIPs. Analysis of the DSIPs prepared so far show that investments for O&M are low, and focus on one-off activities (such as training and equipping area mechanics) rather than a mechanism for continuous support.

There are several sources of funding which can be used for rural water supplies at District Assembly level (including MASAF and the District Development Fund) but a succinct overview of resources is currently not possible. It is anticipated that the adoption of the integrated financial management system (IFMS) at District level will eventually provide a clear overview of financial resources and expenditure.

3.6 Monitoring and Evaluation

The National Monitoring and Evaluation (M&E) Master Plan sets out the main framework for the monitoring of economic and social development policies and programmes in Malawi. A “*Monitoring and Evaluation Framework and System*” for the Second National Water Development Programme (NWDP II) is under preparation. However, discussion with the NWDP revealed that little emphasis is foreseen to include O&M. However, since the JSR 2008 has included an undertaking that Malawi has to formulate a O&M framework for rural water it can be assumed that the aspect of O&M will be included with due importance.

The Water Point Mapping for Rural Water Supplies, carried out by a number of sector players (between 2004 and 2008) provides inventories of sources, functionality and provides the basis for estimating coverage (Figure 4). However, update mechanisms for this data are still weak and NGOs rarely report their new constructions to the District Assemblies or District Water Offices, even though they may monitor facilities, which they constructed. There seems to be no diagnostic data providing information why sources are non-functional or abandoned. The Village Health Book represents another data source, but does not contain sufficient information for district planning.

Figure 4. Extract from Lilongwe District Water Office Database (of 3,320 Handpumps)

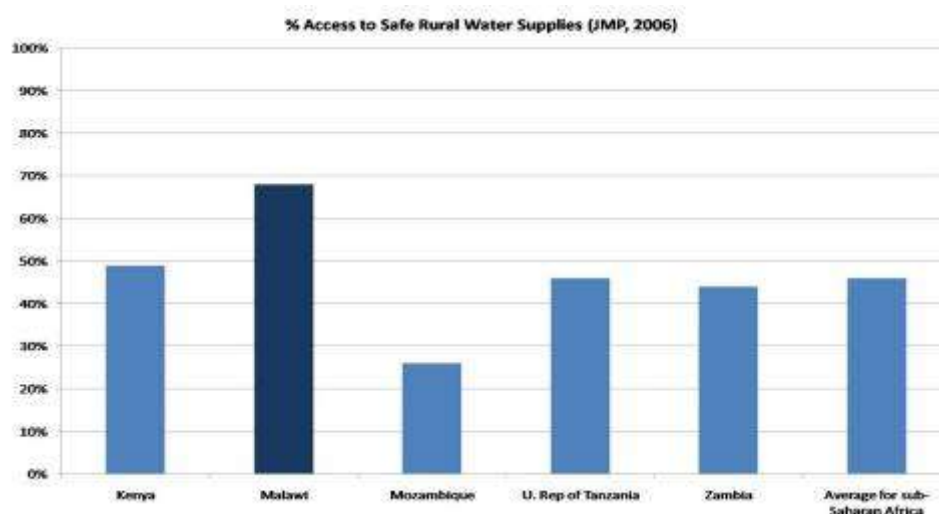
icwp_id	EastingsX	NorthingY	District_name	TA_name	Village_Name	location_nm	water_source	pump_type	condition
206_01_004	595151	8442805	Lilongwe	Chadza TA		Zipendo	Mech. Drilled -	Afridev	Functioning
206_01_014	597463	8444883	Lilongwe	Chadza TA		Chikufenji	Mech. Drilled -	Afridev	Functioning
206_01_016	597734	8445575	Lilongwe	Chadza TA		Msiwa	Mech. Drilled -	Afridev	Functioning
206_01_078	591642	8435377	Lilongwe	Chadza TA	Chadza	Chadza	Mech. Drilled -	No Pump	Needs Repair
206_01_049	595225	8435646	Lilongwe	Chadza TA	Chamadenga	Chamadenga	Mech. Drilled -	Afridev	Functioning
206_04_001	597917	8442755	Lilongwe	Chadza TA	Chamadenga	Chamadenga	Mech. Drilled -	Afridev	Functioning
206_01_067	596840	8432502	Lilongwe	Chadza TA	Chanika	Chanika	- Manual Pump	No Pump	Construction
206_01_007	594097	8442867	Lilongwe	Chadza TA	Chapata	Chapata	Mech. Drilled -	Afridev	Functioning
206_01_105	592957	8425943	Lilongwe	Chadza TA	Chapata	Chapata	Mech. Drilled -	Afridev	Functioning
206_01_053	591295	8442879	Lilongwe	Chadza TA	Chezuzila	Chezuzila	Mech. Drilled -	Afridev	Functioning
206_01_131	593740	8448875	Lilongwe	Chadza TA	Chibudula	Chibudula	- Manual Pump	Afridev	Functioning
206_01_160	582352	8428706	Lilongwe	Chadza TA	Chikome	Chikome	Mech. Drilled -	Afridev	Functioning
206_01_101	594929	8425831	Lilongwe	Chadza TA	Chikumbu	Chikumbu	Mech. Drilled -	Afridev	Functioning
206_01_121	595860	8423146	Lilongwe	Chadza TA	Chilalo	Chilalo	- Manual Pump	Afridev	Functioning
206_01_044	598542	8434581	Lilongwe	Chadza TA	Chilembwe	Chilembwe	- Manual Pump	Afridev	Functioning
206_01_011	596701	8444538	Lilongwe	Chadza TA	Chilinde	Chilinde	- Manual Pump	Afridev	Functioning
206_01_013	597041	8444388	Lilongwe	Chadza TA	Chilu	Chilu	Mech. Drilled -	Afridev	Functioning
206_01_164	586151	8426298	Lilongwe	Chadza TA	Chilu	Chilu	Mech. Drilled -	Afridev	Functioning
206_01_213	594970	8429822	Lilongwe	Chadza TA	Chimphanga	Chimphanga	Mech. Drilled -	Afridev	Functioning
206_01_122	596683	8422165	Lilongwe	Chadza TA	Chimutu	Chimutu	Mech. Drilled -	Afridev	Functioning
206_01_102	594501	8424585	Lilongwe	Chadza TA	Chimwala	Chimwala	- Manual Pump	No Pump	Construction
206_01_009	595670	8444915	Lilongwe	Chadza TA	Chingowe	Chingowe	- Manual Pump	Afridev	Functioning
206_01_140	599325	8418843	Lilongwe	Chadza TA	Chinthankhwa	Chinthankhwa	Mech. Drilled -	Afridev	Functioning
206_01_176	596089	8424111	Lilongwe	Chadza TA	Chinthu	Chinthu	Mech. Drilled -	Afridev	Functioning
206_01_173	587661	8436889	Lilongwe	Chadza TA	Chinyama	Chinyama	- Manual Pump	Afridev	Functioning
206_01_188	590337	8429098	Lilongwe	Chadza TA	Chionangulu	Chionangulu	Mech. Drilled -	Afridev	Functioning
206_01_155	585629	8435674	Lilongwe	Chadza TA	Chipambwe	Chipambwe	Mech. Drilled -	Afridev	Functioning
206_01_052	591597	8442836	Lilongwe	Chadza TA	Chipasula	Chipasula	- Manual Pump	Afridev	Functioning
206_01_032	597398	8436370	Lilongwe	Chadza TA	Chipembere	Chipembere	- Manual Pump	No Pump	Construction

4 Access and Functionality of Rural Water Supplies

4.1 Impressive infrastructure development...

Stakeholders in Malawi tend to use the terms access and coverage interchangeably. Malawi has taken great strides in improving access to safe water (estimated to be 75% in 2007). In comparison to its neighbours, Kenya (where there has also been considerable stability over the last 30 years) and sub-Saharan Africa as a whole Malawi has achieved a leading position (Figure 5). This is indeed a great accomplishment. However, stakeholders note that further raising access from this level is likely to become increasingly difficult, as the areas not covered are more challenging in terms of terrain and water availability.

Figure 5 % Access to Safe Water Supplies in Rural Areas in 2004 (Source JMP, 2006)



4.2 ...but declining functionality

In terms of improved water supplies, Malawi's rural population rely on boreholes and hand dug wells fitted with handpumps as well as gravity flow schemes (GFS) as shown in Table 5. The GFS tend to cover several villages and are large in comparison to rural GFS in many other developing countries (Kleemeier, 2000). On the positive side, access to improved water supplies in rural areas is very high in Malawi, but on the negative side, there is a major problem with respect to functionality. Table 5 shows that 31% of water points are not working, and that this reduces the *effective coverage* to 55%.

Table 5 Functionality and Number of People Served by Improved Water Supplies in 2007 (Source: Water Point Mapping Report, 2007)

Water Source	Number of Sources		Percentage of Sources	
	Total	Functional	Total	Functional
Boreholes fitted with handpumps	24,679	19,404		79%
Gravity Flow Schemes (GFS) Standpipes/Taps (for 82 schemes)	12,456	6,050		49%
Average			69%	
Water Source	Number of People Served		% of People Served	
	Total	With functional sources	Total	With functional sources
Boreholes fitted with handpumps	6,169,750	4,851,000		
Gravity Flow Schemes (GFS) Standpipes/Taps (for 82 schemes)	1,494,720	726,000		
Average			75%	55%
Assumptions: a borehole fitted with handpump serves 250 people, a GFS tap serves 120 people. Rural population is 10,174,802.				

District water officers interviewed estimated functionality rates to range from 75% (Dowa) to 40% (Rumphi). The discussions with DWO revealed that a few hundred to well over 1,000 handpumps are not working in each district (Thyolo: 830 non-functioning pumps out of 3,600 installations; Mulanje: 300 non-functioning pumps out of 1,088 installations). In Mzimba, it was estimated that about 750 existing boreholes in the District were not functioning. Compare this figure with the 998 new boreholes drilled with AfDB funding in three years. Unless serious action is taken to bring broken-down boreholes back into operation and ensure that existing boreholes are properly maintained, investments in new boreholes are not going to raise coverage further.

In the 1980s, the operation and maintenance system included tap committees, repair committees, monitoring assistants and monitoring supervisors who all lived in the rural areas. Work programmes involving regular field visits by monitoring assistants were drawn up, and supervisors assisted with major repairs. Government defined its role as backstopping community efforts (Kleemeier, 2000). The high functionality of piped water supplies of the 1980's has declined considerably over time (Table 6). A summary of the findings of a 1998 study is given in Annex 4 and chapter 6 presents the findings of this study.

Table 6 Change in Functionality Rates of Piped Water Schemes

Dates	Survey/Study	Findings
1982-83	Water Department Survey of five piped schemes ⁶	Water available at the observed taps for 85% to 99% of days over a one-year period.
1983-84	Analysis of Monitoring Assistant Reports for three schemes	Selected taps had water for 80% of the days.
1984	Study of eight schemes	Selected taps provided water 97% or more of the days. Breakages repaired in two days or less in 91% of cases.
1998	Study of 17 schemes	66% of the taps supply water for a minimum of 50% of the days over the past three months.
2007	National Water Point Mapping	49% of all GFS taps were not working. .

5 Study Findings

This chapter sets out the key findings from the consultations and observations during the fieldwork.

5.1 District Assembly and District Water Office

Although Malawi commenced decentralisation in 1999, there is still some way to go in terms of district political representation, availability of resources and capacities at district level and a comprehensive planning and accountability process. Rural development through the District Assemblies is planned through the village action planning process, whereby village development committees (VDCs) submit their requests to area development committees (ADCs) which are taken up to the District Assemblies.

In general, the state of District Water Offices in Malawi is poor. In many cases, they were even hard pressed to provide seats for visitors. Offices appeared to be cramped and poorly equipped. Although District Water Officers were found to be in place, they tend to be at a much lower grade than the position required. Several new District Water Officers have recently been employed. They are fresh university graduates, or from other professions (such as teaching), they lack experience and are hardly given any support, back-up or supervision from outside the District.

District Water Offices are grossly understaffed. Water Monitoring Assistants (WMAs), considered to be the backbone of O&M and main link between water users and the District Water Office are expected to form and train committees, monitor borehole drilling, monitor borehole status and undertake major repairs. Out of all the Districts visited, only Mzimba (part of the AfDB funded Integrated Water supply and sanitation Project) has a sizeable number of WMAs (Table 7).

⁶ Warner et al, 1986, pp 70-1, as cited Kleemeier, 2000, pp934

Table 7 District Water Offices – Water Monitoring Assistant Staffing

	No of Traditional Authorities	Number of WMA	% of TA's with WMA
Lilongwe	18	2	11%
Mchinji	7	2 s	29%
Dedza	9	2 (total staff of 14)	22%
Ntcheu	10	2	20%
Karonga	6	3 (total staff of 26 including water assistants and plumbers. ½ are temporary staff).	50%
Nkhata Bay	18	1 (a second WMA is seconded to the NGO World Vision)	5%
Mzimba	10	17 (8 on contract)	170%
Thyolo	12	2 (plus 2 BHS)	17%
Mulanje	12	1 (plus 1 BHS)	8%
Mwanza	8	1	12%
Machinga	12	2 (1 motorcycle not in running condition)	17%

In terms of transport, District Water Offices have one (or zero) old pickup truck and one or two motorcycles. The lack of experience of new District Water Officers, low staff numbers, inadequate transport and poor resources means that the support to O&M of existing water supplies is negligible.

The difference between Mzimba District Water Office and the others visited could not be more striking. With AfDB funding for the past three years, new district water offices have been built, transport, computers and office furniture has been funded as well infrastructure (including about 1,000 boreholes). Mzimba has a District Water Officer (responsible for the AfDB project), another Water Officer responsible for the UNICEF WASH work and 17 Water Monitoring Assistants (covering 10 TAs), each with a working motorcycle. There is a Project Implementation Unit in the District with 41 person months of consulting input (an engineer and community development specialist), a project accountant, assistant account accountant and messenger. Five vehicles and 18 new motorcycles are available for fieldwork. WMAs are paid their government salary of MWK 10,000 per month (~USD 70), and receive a project salary top up of MWK 18,000 (~USD 125).

There is a widely held belief that the District Water Office could get the broken down systems working again if they are given enough fuel. Nevertheless, the DWO estimates about what effort in time and resources such an undertaking would actually require are somewhat unrealistic. In one District, it was claimed that they managed to repair 80 boreholes in two days with six people.

5.2 Coordination

5.2.1 Government – Government Coordination

Although the District Water Offices are formally part of the Ministry of Irrigation and Water Development, there is considerable mistrust of the central ministry by District Water Office staff, e.g. *“everything is spent at the centre”*.

Almost without fail, staff of the District Water Offices heavily criticised the central Ministry for drilling boreholes, and not informing them of the work. Similar, the RWO complained that the DWO

do not relate data to them and vice versa. Discussions with water users, the District Water Office and the regional office regarding the rehabilitation of a GFS in 2002/3 in Karonga suggested that there had been no involvement of regional or district water departments in the work. Apparently, the community members were liaising directly with central Government.

5.2.2 Government – NGO Coordination

There is no overview of the financial inputs or outputs of non-government organisations for the rural water sub-sector as a whole, neither nationally, nor for individual districts. District Water Office and Regional staff repeatedly mentioned that NGOs work in isolation and do not provide information in terms of their plans or outputs. There are apparently numerous cases of the District Water Office learning about new water facilities by chance, or when the supply breaks down and the community seeks assistance from the Government for repair. In Mulanje the offices of Plan International are adjacent to the DWO (less than 50m away), but the NGO does not communicate the new water developments to the DWO. It could be that the NGO considers the DWO inefficient because of lack of staff and resources, therefore co-ordination and co-operation are regarded as not necessary.

However some NGOs request District Government staff to undertake CBM training for them, and there are cases of improving coordination between NGOs and Government (Box 2). Initiatives by Kasungu District Assembly to ensure that every new NGO is approved by them (through a committee); and by Nkhata-Bay to coerce NGOs into collaboration are particularly encouraging.

Box 2 Examples of Coordination between NGOs in Rural Water Supplies & Government in Malawi

- World Vision has seconded one of the two WMAs to their GFS construction project in Nkhata-Bay. According to the District Assembly, *“we had to put our foot down in order to bring World Vision to us”*.
- Kasungu District Assembly has established an NGO committee, which reports to the DEC. TAs have been sensitised to report any NGO activity to the District Assembly.
- The NGO Inter Aide had to obtain agreement from the DEC in Mchinji in the form of endorsement letters before it was able to start operations.
- NGOs operating in Lilongwe District are invited to the District Coordination Team (DCT) – WES. Some attend but others just go to the field and undertake their activities.
- Representatives from the Church of Central Africa Presbyterian (CCAP) Synod of Livingstonia claim that they collaborate with Government *“We make sure the District Assembly knows”*. This could not be corroborated through discussions with District Water Office representatives from several Districts who claim that the Church does not inform if of its plans or activities. This perception may be partly due to poor communication within the District Assembly itself. However, CCAP point out that collaboration is not simple as their boundaries are different from those of the Government and that *“donors do not give money for Livingstonia to work with the Government”*. There is clearly a need for a change of attitudes as well as dialogue to develop better coordination between the two entities.
- Most of the NGOs and CBOs operating in Mzimba District have their offices in the town of Mzuzu and thus rarely call in at the District Water Office, situated over 100km away.

A clear policy in terms of NGO/CBO work plan approval by District Assembly (including the District Water Office) is essential. This should include a signed agreement (e.g. Memorandum of Understanding) between the two organisations setting out roles and responsibilities, standards to be followed as well as joint planning and reporting requirements.

The Council for Non-Governmental Organisations in Malawi (Congoma) and the (yet to be formed) Water and Sanitation NGO Network for Malawi may also be able to improve NGO/Government coordination at district as well as national level, but this requires more investigation.

5.3 Technology Choice

In Malawi, piped water supplies and boreholes installed with handpumps are the technologies of first and second choice respectively. However, technology choice is often donor driven, e.g. UNICEF, JICA or AfDB funds mainly boreholes. Other NGOs state, *“We build shallow wells because the donor is interested in shallow wells”*. There appear to be many cases where lower cost technologies such as improving existing shallow wells (through deepening, covering, installation of handpump), encouraging the construction of household shallow wells or protecting springs are overlooked. This is a missed opportunity, both in terms of achieving the MDGs and of sustainability. These technologies may be more affordable and easier to manage for rural Malawians. As the example of Zimbabwe shows, shallow wells can be an important supplementary technology in rural water supply and the choice should not be “either-or”.

Unless there is a major shift in policy, the preference towards pipes schemes and drilled boreholes is unlikely to change in the near future.

5.4 Construction Quality and Supervision

There is a distinct lack of hydro geologists in the country, and most drilling supervision is undertaken by communities, who are given “pre-drilling” training as part of the CBM1 training (Box 3). Annex 3 provides an example of the supervision form that the community completes (Mzimba District). Mzimba District, which is funded by AfDB, is an exception and seems to have had considerably supervision of private drillers by hydro geologists (covering 4 or 5 sites at once).

There were frequent complaints by District Water Offices regarding the construction quality of boreholes. It was specifically mentioned that boreholes constructed for MPs and those drilled under the Constituency Development Fund were of bad quality (lack of water, runs dry after a few months, no sanitary seal). It is not clear how many of the dysfunctional boreholes are not working because of poor drilling, siting and construction workmanship, but it seems that many of them are beyond repair and will have to be written off.

Another concern is that widespread borehole drilling has taken place throughout the country with very little understanding of the groundwater resources. An exception is the AfDB financed project in Mzimba where a groundwater resources assessment was undertaken.

5.5 Community Based Maintenance (CBM)

5.5.1 CBM Training

It is well understood by almost all stakeholders that Community Based Maintenance (CBM) training (Box 3) is an essential part of providing water users with the requisite skills and knowledge to manage and maintain their new water facilities. Although Government stakeholders (WMA and BHS) seemed to be familiar with CBM training, training manuals, materials and visual aids were not easy to obtain in the Districts. The mission team did not find an English version of the CBM manual. Most DWO did not have any training materials. This, coupled with the staff turnover is cause for concern. There is clearly a need to reprint and disseminate CBM materials on a wide scale. However, there

may also be need to overhaul the materials in line with the planned new operation and maintenance framework.

Box 3 Community Based Maintenance 1 (CBM1) Training

Community sensitisation and training (when it takes place) tends to be undertaken by the Water Monitoring Assistants (WMAs), Borehole Supervisors (BHS), Community Development Assistants (CDAs) and Health Surveillance Assistants (HSAs). The five days training is given to the 10 members of the VWC and it comprises three parts as follows:

- Part 1 mobilise and form committees;
- Part 2 pre-project (including pre-drilling) training and
- Part 3 training of O&M of the caretakers

Among most stakeholders interviewed, there was a perception that this initial training is enough, as summarised by an NGO representative: *“Once we have trained the community, we expect them to maintain their facilities for ever”*, and he added further: *“the borehole should function for ten years”*. A good analogy is putting fuel once into a new car and expecting it to run forever. However, some stakeholders stated that the CBM1 training is not sufficient and is sometimes of poor quality as aptly put by one interviewee: *“One afternoon does not change the community’s belief that the Government does everything for them”*.

CBM2 training was mentioned but it seems to be hardly carried out at all. In addition, there was vagueness about what is actually included.

In general, District Water Officers and regional staff stated that numerous communities have never received CBM training. This includes those benefiting from programmes undertaken by central Government, e.g. *“some drilling programmes come from central Government on campaigns. They drill and do not train”*, for political demands, or *“we have to move fast, no time to undertake CBM1”*. Based on the numerous discussions, the authors of this report estimate that as much as 40% of communities have never been trained.

NGOs normally delegate the CBM training to the DWO staff. They pay a daily allowance (food and lodging) to the committee members. It is not clear whether the WMA/BHS always receive an allowance as well. In addition, it was not clear what facilities (teaching aids, posters, tools, etc.) are available for the training. Definitely the VWC members do not receive a documentation that would allow them to refer to the training later.

In Mzima District (AfDB funded), the process of orientation; community sensitisation; application for water sources; desk and field appraisal; announcement of successful applicants and training (committees, pre-drilling, post-drilling) seems to be well defined. Various guidelines and manuals were developed. These may be of use for wider application in the country.

5.5.2 Community Contributions

Under demand responsive approach (DRA) policies, officially, communities are supposed to collect MWK 15,000 and put the money onto a bank account as a start-up O&M fund before they receive a borehole. In the case of a shallow well, the figure is MWK 3,000. In reality, practices differ:

- In some places, communities provide food, sands and bricks for the drilling crew. In others, the contractors pay the community for the collection of local materials (partly as a way of compensating the community for collecting money in the first place).

- WaterAid explained that the communities contribute in kind as well as cash. The cash is held by the Area Development Committee (ADC). Some contribute before, and others after construction, but at least half of the amount should be collected prior to beginning of construction. It can take nine months to a year to collect the balance.
- Some projects encourage water users to purchase spares with the money that they have collected rather than opening a bank account.
- Some organisations (e.g. Plan) provide communities with free starter packs; others do not. This adds to the confusion about community contribution. *(Some get a free gift together with a handpump and others have to pay).*
- In Mzimba District, collection of the MWK 15,000 was apparently fairly successful. Although, a balance is still being collected in some places. It is not always easy to enforce: *“you will be lenient when the community has killed a goat for you.”*

The differences in approach are also because of different attitudes by sector professionals, some of whom do not think that users can afford to contribute, *“they are too poor”*; *“they are vulnerable”*.

Due to lack of comprehensive data, it is not possible to draw significant conclusions about the extent to which communities regularly collect funds for the maintenance of their water supplies. However, anecdotal evidence suggests that they usually collect funds when a particular handpump has broken down. Piped water supplies that have just been rehabilitated seem to be an exception to this approach as they are encouraged to collect a water tariff.

When questioned about why communities are not purchasing spare parts or raising funds for maintenance, the standard answer given by most sector professionals was that *“they have not been empowered”*. In the water sector in Malawi, it seems that the term *“empowerment”* refers to whether a community has been told, and accepted that they have to pay.

5.6 Vandalism and Theft

Unlike other African countries, where theft of handpumps and their components is rather exceptional, vandalism of rural water supplies appears to occur throughout most of Malawi but there is no comprehensive data on the extent of the problem. In the case of handpumps, thieves come in the night, open the pump and steal various components. Theories as to who is responsible for this are wide ranging, including *“the refugees who return to Mozambique”*; *“(pump) area mechanics steal the parts and sell them”*; *“communities stealing parts to fix their own pumps as they cannot obtain spares”* and *“thieves who use the parts for other things such as burglar bars”*. The latter is particularly hard to believe. Local pump manufacture of indigenous types of pumps could be another reason for theft of parts.

Whoever vandalises handpumps clearly knows how to dismantle them. Padlocks have not proved to be a significant deterrent. Pumps that are distant from the village are clearly more at risk than those nearby.

In Rumphu, there are reported cases of people who pretended to be from the District Water Office and have taken money from communities for spare parts, never to return.

5.7 Politics

Sector stakeholders throughout the consultations informed the team that the provision of water is a political campaigning tool. Before elections, politicians promise their constituency ready access to water and sometimes even free. This is a clear violation of the water policy and affects adversely the willingness to contribute towards construction and to take responsibility for maintaining the water points. It was also mentioned that the hasty provision of water affects construction quality (section 6.4) and CBM training (section 6.5).

5.8 Piped Water Supplies

5.8.1 Status

From the schemes visited, and discussions held, practically all of Malawi's rural Gravity Flow Systems (GFS) are in a sorry state (Table 8). The exception to this may be the schemes that *very recently* been rehabilitated. GFS vary in size and complexity. They tend to serve more than one village and may serve small trading centres as well as rural villages. GFS suffer from environmental degradation in the catchment areas of the intakes as more and more trees are cut, and rivers that used to be perennial now run dry before the rainy season starts. For the few GFS where the intake and entire catchment is in a protected area the future is reasonably bright. Environmental deterioration is cause for major concerns with respect water security for the others.

Table 8 Summary Status of Rural Gravity Fed Water Supplies

District	Scheme	Comments on Functionality
Ntcheu		Problem with vandalism and theft on all 7 schemes in the District
	Mpira-Balaka	Recently rehabilitated by AfDB. Dam is apparently silting.
	Dombole	The Government employed person operating the scheme died 4 years ago and has not been replaced. The District Water Office watchman now does some maintenance. Of the originally 20 people in the repair teams, only one is left. Pipes at the intake were stolen and the storage tanks and treatment works are completely out of use (Figure 6).
Karonga		None of the four GFS in the District are working properly.
	Lifilya	Scheme built in 1982 and worked well for about 6 years. In 1988, the main line was hit by falling rocks. The system has not worked for 20 years. Now under rehabilitation.
	Iponga	Main line and gulley crossing washed away.
	Chonanga	21 out of 65 taps are working. One branch is no longer working at all. Apparently, rehabilitation is required.
	Ighembe	Scheme partially functional. It was decided to build a dam at the inlet last year but the work was not completed.
Rumphi	Mkhamanga	Built in the 1990s and rehabilitated in 2002/3 with World Bank funds. About 60% of the 705 taps are not working and the water no longer reaches Rumphi town,

		which it used to supply.
Mwanza	Mwanza	Action Aid is in progress of rehabilitating the GFS. During the discussion with the study team, they realised for the first time that their approach to just rebuild the scheme leaves a gap for O&M. Action Aid promised to use their last 6 months of activity in Malawi to set up an O&M structure. The period for such a late “add-on” appears to be very short.
Machinga	Machinga	The GFS regularly runs out of water in the dry season. The reason quoted was that the trees in the catchment area have been cut down and thus the river has no water. Nobody seems to be concerned about this and the solution to this problem was to drill boreholes next to the stand posts. The communities do not feel responsible for either the handpump or the GFS and see no reason why they should contribute towards O&M cost.

Figure 6 Dry Treatment Plant in Dombole



The maintenance of GFS is often complex and the cause of the failure is far away. Thus repairs, even though they could well be managed are not carried out. The effect of a small cause can be big. A failure in an intake or a leaking main line pipe causes the entire system to be down. Often these small aspect breakdowns are not fixed and the system remains out of function for years and years.

5.8.2 Management, Maintenance and Support

In terms of GFS management and maintenance there appears to be an overlap with District Water Office staff (e.g. scheme field mechanic, supervisor or water assistant) housed on location at the GFS, and responsible for running the scheme; and community management. However, neither of these has been given much back-up support, nor is government staff replaced.

In Mulanje, the MoIWD was initially responsible for the O&M of the nine schemes in the District. Ten years ago there were nine Water Monitoring assistants, each responsible for one scheme. At present time, there is one WMA with one old motor cycle. As well as the Dombole case (Table 8, Figure 6), the Government employee who works as caretaker of Chonanga GFS (Karonga) for a salary of MK 8,000 per month has to borrow tools. Although the scheme covers an estimated 18km², he has no funds for transport. It appears committees are trained once, and then left alone to manage the schemes. The caretaker of Chonanga scheme explained that the people on the committee, who were last trained in 1996, are now “*dead, gone, or tired*”.

In terms of community management, up to recently every GFS tap is supposed to have a tap committee. Sometimes branch committees are formed consisting of tap committee representatives. A main committee is responsible for the intake, tanks, break pressure tanks and treatment plant. All members on these committees are non-paid volunteers. Visits to a number of schemes showed that fees were sometimes collected. Usually tariff collection takes place at those schemes, which had been rehabilitated recently (such as Khosolo in Mzimba District). Particularly worrying is the lack of clarity by either the NGO or the District Assembly over the management of a newly built piped water supply in Nkhata Bay, intended to serve 24,000 people (Chikwa-Mpamba). The NGO, who supported the construction, neglected to organise any O&M structures.

Even when some form of community management system is in place, the complexity, lack of information and sheer size of a scheme can render community management difficult. The committee members with lack of technical understanding and managerial capacity are overwhelmed by the problems and have no fall-back organisation to ask for support. A visit to the Mkhamanga GFS (Rumphi), found a black and white schematic diagram on an A4 page, with illegible keys (Figure 7). The WMA and WUA bookkeeper were hard pressed to explain, whether it is one scheme or two, how the water flows, and which intakes serve which branches. Apparently, at some point in time, people started connecting taps to the main line. Over the years, the scheme no longer serves the areas that it was designed to cover. This may sound like the familiar story of a very old scheme, but it was rehabilitated, (with World Bank funds) in 2002/3. The recently established WUA plans to register as a cooperative. Some revenue is being collected (they apparently have MWK 50,000 in the bank), but the scheme needs to be redesigned and rehabilitated once again.

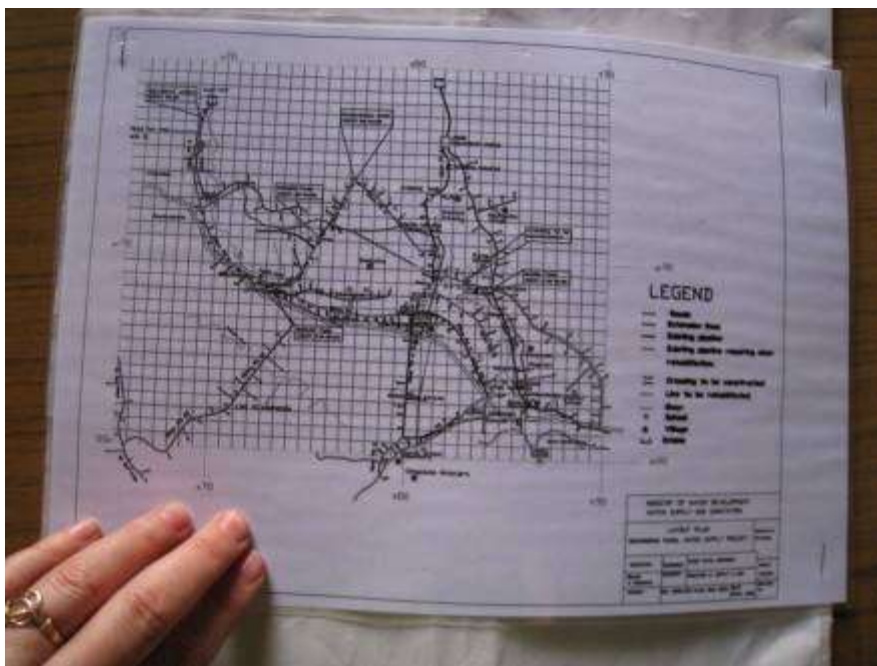


Figure 7 Schematic Diagram of Mkhamange GFS (Rumphi)

5.8.3 New model of GFS management

MoIWD is piloting a new model in cooperation with AfDB and WaterAid (Chagwa, Nanikomya, Khosolo), whereby the schemes are managed by a Water User Association, which can be registered as an association, cooperative, trust or company. These are all legal entities which can open a bank account, own assets, sue and be sued and contract out work, or employ staff. It is the intention that the WUA will employ a local operator, paid on a performance basis to operate and maintain the scheme.

It is very important to recognise the level of professionalism required to run effectively piped water supplies. This fact seems to be better recognised in the urban context where regional water boards

manage the schemes. A case in point is the Chilumba scheme (Karonga District), with 1,007 consumers (households, communities and institutions). It is metered, with set tariffs depending on the user. It has a staff of 14 people, of whom three are located at the pumping station. This is a strikingly professional set-up in comparison to the management of the rural GFS run by part-time, un-skilled volunteers.

WaterAid (who supported the rehabilitation of Chagwa and Namikomya GFS) apparently undertake an audit of GFS accounts and hold meetings with the WUA every quarter.

5.8.4 Tariffs

Apparently, the tariffs set for many of the GFS schemes are on the very low side (e.g. MWK 100/tap/month goes from the tap to the main branch committee in Khosolo). Discussions with respect to developing suitable tariff structures for GFS are ongoing. It is however important to ensure that the tariffs are set at a level that allows paying for the recurrent O&M cost, which include the cost of tariff collection and administration of accounts.

5.8.5 Spare Parts

One is less likely to find spare parts (other than taps) for piped water supplies stocked around the country than for the Afridev handpump. Taps are seldom repaired, as the villagers do not know how to replace a rubber disk. Therefore, the taps are forced close and used until totally broken and then replaced.

Stockists claim that it is not worth their while as the parts move so slowly. Given the massive breakdown in most GFS in Malawi and the lack of skills to repair them, it is hard to encourage suppliers to stock these spare parts as a commercial venture. WaterAid have apparently started discussions with shops in the areas where they were involved in rehabilitation.

5.9 Boreholes with Handpumps

5.9.1 Standardisation

The fact that Malawi has adopted and more or less adhered to a standardisation policy for handpumps is a major achievement. Standardisation of equipment has a vital effect on the sustainability and offers significant benefits that should not be ignored. These include:

- Facilitation of co-ordination, supervision and monitoring
- Potential to utilise the benefits from economies of scale
- Minimising fragmentation of market demand, thereby increasing the economic viability of local supply chains and reducing the cost of spare parts
- Promoting local manufacture
- Limiting the variety of spare parts
- Enhanced quality spare parts
- More efficient inventory control
- Accelerating capacity building and reducing training needs
- Familiarisation of communities with the technology for village level O&M

Human beings in general prefer to use equipment that they know. They feel less inhibited to address a problem on a technology they feel at ease with. Under community managed O&M it is an ongoing task to train the people responsible for the management of the O&M and the minor repairs.

Dropouts constantly need to be replaced. The potential to pass on the knowledge how to handle repairs locally (within the community) will help to enhance sustainability.

Malawi standard pumps are the Afridev (drilled boreholes) and the Malda (hand dug wells). The Malda is manufactured in Malawi. This policy has helped to keep the functionality of rural water at the present level. The Afridev and Malda are strong and sturdy and can be operated for a quite some time with minimum maintenance. However, if the pumps are kept working without the necessary attention to the small repairs the subsequent damage done to pump head and handle is severe (see Figure 8)

Figure 8 Damaged Afridev Pump head



Marion Medical Foundation, who in partnership with Livingstonia Synod, supports the construction of shallow wells by providing the pump and cement. They install the Mark V and estimate that about 6,000 pumps have been installed in Malawi (mainly in the north and Mkoma). This seems a very large number, which should be verified. Mpanga Holdings and Promat make some pumps, but the majority of pumps are manufactured by CCAP Livingstonia. According to Marion Medical Foundation, the synod sells parts through local shops, which have been supported by a revolving fund.

There are also still some Climax Pumps around, and some India II pumps have been installed.

The Elephant Pump (a rope pump) and the Canzee Pump have been piloted in some places but these have not been reviewed as part of this consultancy. The introduction of new technologies should be handled prudently. Tests to introduce new equipment should be endorsed by MoIWD. A new pump design should be field tested under rigorous conditions and monitored carefully to assess performance in terms of reliability, maintainability, cost effectiveness and sustainability. Only if the trials are successful, the design may be considered for adoption on a national scale.

5.9.2 Management

A community elected (or selected) committee (VWC), usually comprising ten members, is expected to manage the handpump source. They are expected to collect money on a regular basis, but anecdotal evidence indicates that this is rarely done. More commonly, the community will raise money when the pump has broken down. Figure 9 for example shows a pump, which had been vandalised. In another case, the community borrowed money from the village headman to replace

the stolen components. They are expected to pay back the MK 5,000 for the parts and area mechanic over two months by collecting MK 150 per household per month.

Figure 9 Repaired vandalised pump



5.9.3 Minor and Major Repairs

Despite the policy of community based operation and maintenance, many stakeholders consider Government to be responsible for repairs. The borehole maintenance programme of 2007, in which broken pumps were repaired using a central Government fund, with no payment from the community was not in line with the CBM policy. Because of these attitudes and actions, water users are given mixed messages about who is responsible for maintenance and repair.

In general, the District Water Offices explained that minor repairs are undertaken by the community and major repairs (often referred to as rehabilitation) by the Government. There is no clear perception or written definition of what consists of a major repair. In Dedza, it was explained that a breakage of the pump rods would be considered as a major repair. In others, removing the rising main is considered a major repair. More than one District Water Office explained that most boreholes maintenance is actually undertaken by the Government, citing the 2007 national borehole maintenance programme as an example.

In several cases, repairs involve the communities purchasing spares, and the District Water Officer undertaking repairs. This is apparently done free of charge, although it was pointed out that communities are often requested to pay for fuel.

5.9.4 Spares and Spare Parts Dealers

An inconsistency in Malawi's policy on rural water is that handpumps can be imported free of duty whereas spare parts are subject to import duties and sales tax. This discrepancy reduces the cost of new installations paid by donors and increases the cost of spare parts paid by the community.

In rural Malawi, the responsibility to purchase spares for handpumps lies with the water users themselves. If the committee is able and willing to change a part themselves, and can get hold of it, they will do so. Where there are Area Mechanics, they rely on the community to buy the spares, and simply do the installation.

The team observed that although Afridev spares are available in most Districts, this is not the case with the Malda. Spare part supply for Afridev Pumps is provided through 77 Chipiku stores. These stores stock a minimal amount of fast moving spares. The sales of spare parts by Chipiku dates back to the late eighties when Chipiku (then a government owned chain) stocked spare parts for Afridev pumps. This initiative was taken up again in 2002 by the now privatised stores.

In the Central region, Inter aide started setting up spare part outlets that sell Afridev spares in addition to the Chipiku stores. Spare parts for Malda pumps are not available everywhere in the country despite the fact the pump is made locally. The NGOs, which buy these pumps, never bothered setting up a supply chain. (Since the MALDA is only used on shallow dug wells with limited lift, the pump needs few spares and the situation was not considered grave enough to take any action). Inter aide is the only NGO that introduced a minimal supply of Malda spare parts in Lilongwe and Mchinji districts.

In several Districts (e.g. Mchinji) there were as many as ten (four Chipiku and six private) spare parts dealers set up by Inter aide and Chipiku, while in others spares were only available from the Chipiku stores (Box 3). The Districts with more dealers seem to have benefited from the training and support by Inter aide and Badea (Box 5). Both the Chipiku managers and the District staff were very positive about the training given to these spare parts dealers; it puts them in a stronger position to understand the technical aspects of pump repair and thus better respond to the requests of water users.

Figure 10 Spares at the Okumatani shop (Lilongwe District)



It should be noted that all stores keep the fast moving parts only.

Components that are not selling every day are not kept in the local stores. It was not possible to assess how long it would take to have a large, expensive component delivered to the local store. For instance, if an Afridev pump head was required it might take several weeks before it can be located in the country. The situation would be aggravated by the fact that the communities would first have to raise the funds for the component before it

could be ordered. Thus, a functioning supply chain for pumps and spares would be a great asset.

Discussions with the spares dealers, including Chipiku, revealed that they perceive the stocking of spare parts more as a social than a commercial activity. However, Agwande, of the Okomatani shop in Lilongwe (Figure 10) claims that he sells spares every day and stated: *"it is a good business because people come and buy other things [from my shop] as well"*.

Spare part prices seem to vary considerably. For example, the Okomatani shop in Lilongwe District sells stainless steel rods at MWK 2,780, and GI rods at MWK 1,480. In contrast, Chipiku stores sell stainless steel rods at MWK 4,700, Kalaria in Lilongwe MWK 4,250. In Dedza, stainless steel pump rods cost MWK 3,400. In Karonga stainless steel rods sell at MWK 4,000, where as they are apparently 3,500 in Mzuzu and 2,950 in Lilongwe. Annex 2 sets out the Okomatani shop price list.

Box 3 Chipiku Stores

Chipiku Stores is a rural based business, with 77 branches located in all of Malawi's 29 Districts. The stores have been around for about 50 years and were initially "run like a

Government Department" under the Dr Banda regime. Seven years after the Malawian economy was liberalised in 1994, Chipiku went bankrupt in and it was sold to the current shareholders.



Chipiku has a history of stocking Afridev spare parts, which started back in 1988. Display boards (figure left)



were an integral part of the wares sold throughout the country. The spare parts were reintroduced in 2003, seen as more of a community, than highly profitable initiative. The Malawi Government provided Chipiki with a recommended list of spares (40,000 items) which were procured for sale through the chain of stores.

However, soon afterwards, UNICEF provided free spares for distribution through District Assemblies. Some of these have been distributed freely by the District Water Offices, with some apparently also sold. Trying to compete with free, and lower cost spares was not easy for Chipiku.

Up to 2006, all imports into Malawi were subject to ITS and IGS pre-shipment inspection. This guaranteed a certain quality, including hand pumps and spares which is no longer the case.

The main challenge faced by Chipiku is getting the spares from the shop level to the village.

Numerous Government and NGO stakeholders are of the opinion that communities cannot afford to purchase spares, and that they should be provided free of charge. Pump rods in particular have been cited as very expensive for communities. Others point out that not purchasing spares is a question of attitude rather than of ability... "after all people can afford to buy alcohol" or "people can afford to pay for funerals", or "they do not buy them because they have not been empowered". Meanwhile WaterAid proudly tell the story of a committee in Salima that managed to maintain their borehole for 15 years, pointing to the transparency of the committee as a key factor; data from Inter aide shows that spares are being bought and spare parts dealers do sell components.

Basically, there is no consistent approach as to whether spares are sold or given away:

- In some Districts, free spares can sometimes be obtained from the District Water Office (in 2007 this was mainly in conjunction with a national rehabilitation/borehole maintenance

programme while in Ntcheu the spares were apparently only available for disaster areas). In Dowa, there are apparently communities that come “every day” to the District Water Office to look for spares.

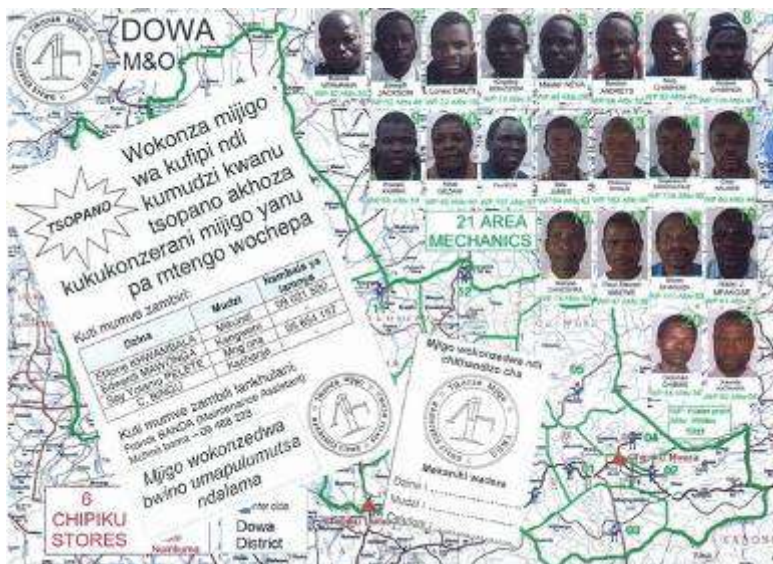
- There were allegations (not confirmed) that some District Water Offices sell spares.
- The Constituency Development Funds are sometimes used to purchase spares. In these cases, District Water Office staff tends to be told which boreholes to repair (by their MPs). As one District Water Officer pointed out “this is killing community-based maintenance”.
- The Evangelical Lutheran Development Service (ELDS) give out spares for the Malda pumps that they have installed.
- According to one NGO involved in selling spares, World Vision and the Red Cross give spares out free. This could not be verified.
- CCAP Livingstonia stocks spare parts for Afridev handpumps. They state that they sell spares to the community at the same prices as Chipiku (from whom they purchase).

The giving of free spares undermines the involvement of the private sector in the supply chain.

5.9.5 Area Mechanics

The most encouraging initiative to improve the functionality of handpumps, regardless of who installed them is being undertaken by the NGOs Inter aide and Badea. Realising the need for shops to sell spares, they started to catalyse them into action in 2001. From 2007, they have been training, encouraging and monitoring Area Mechanics to maintain and repair boreholes in the Districts of Lilongwe, Mchinji, Zomba, Dowa, Salima and Mulanje (Figure 11; Box 5). Preliminary results are encouraging. Private artisanal Area Mechanics are being paid by communities to repair their handpumps. As an example, Box 6 describes the encouraging handpump repair in Mchinji, as observed by the consultancy team.

Figure 11 Monitoring and Promotional Materials for Area Mechanics produced by Inter aide



Area Mechanics do face challenges. Some communities are reluctant to pay them for their work (they may think that they are already paid by Government or that they should work as volunteers); some boreholes are so low yielding that the users have no incentive maintaining them. In some places, the community will pay more if the Area Mechanic has to travel a longer distance.

Box 5 Support to Area Mechanics and Spare Parts Dealers by the NGOs Inter aide and Badea

If Area Mechanics (AM) have already been selected, Inter aide tries to work with them. Thus, considerable time may be spent trying to locate them (e.g. Ntcheu). AMs are trained, issued with a bicycle and tools, and they sign a contract with Inter aid and the District Water Office. Although neither pays a salary, the contract stipulates the work and apparently provides some sort of moral obligation over them.

AMs tend to have about 50 handpumps “in their constituency” and can have two types of contracts with communities. Maintenance contracts are intended for preventative maintenance. They stipulate that VWC pay the AM for two visits per year. The repair contracts are for a specific piece of work when a pump has broken down and a repair is necessary. To date, the maintenance contracts have not as been well taken up. The understanding of the importance of preventive maintenance is still lacking. Repair contracts are a reaction to a situation that needs remedial action. In 2007/8 in Lilongwe District, some 1,695 repair and 961 maintenance contracts were signed. Meanwhile in Zomba, 75 and 38 repair and maintenance contracts respectively were established.

In terms of support, the NGOs provide refresher training for the AMs once or twice a year. In Lilongwe District, a local NGO, Badea is following them up. In Mchinji, Inter aide employs and facilitates (with motorcycle and fuel) a maintenance assistance stationed at the District Water Office. He monitors the AMs and meets them on a monthly basis. In cases where they are weak, a solution is sought. Meetings are also held with other stakeholders such as the health surveillance assistants (HSAs) and one-day refresher training is provided every three months.

The table below provides a summary of the performance of 19 Area mechanics in Mchinji District.

Apparently, the first contact with the Area Mechanics usually takes place when a breakdown occurs but there are cases of Area Mechanics who have been very proactive in obtaining work.

Performance of Area Mechanics in Mchinji District (May to September 2008)

LA	May		June		July		August		September		Total Number of contracts	Total Money collected
	Number of contracts	Money collected	Number of contracts	Money collected	Number of contracts	Money collected	Number of contracts	Money collected	Number of contracts	Money collected		
Fanuel SENGANI	4	2470	1	1000	2	3000	6	8200	2	2500	15	17170
Hardwork MVULA	1	500	6	3000	2	1000	3	1750			12	6250
Jailos PHIRI	4	2750	2	750	5	3250	5	3200	7	3800	23	13750
L. SINGALAWA	5	2500	4	2000	3	1500	1	500	2	1000	15	7500
Mercias MUMBA	1	300	1	400			2	850	1	700	5	2250
Nyongoni ZULU	2	1000			2	1500	3	2250			7	4750
Spy Yotamu PELETE							1	500	2	1300	3	1800
Efitone KHWAMBALA							3	1750	2	2000	5	3750
Edwardi MAWONGA			13	6800							13	6800
Alexander KAZINGA			2	1000							2	1000
George MPALUME			3	1600	1	1500	1	1000	3	1300	8	5400
Nelson ZIDANA			3	2500	2	2000	4	2000	1	500	10	7000
Josophati KASALIKA					1	1500					1	1500
Edwin.A CHISIYESIYE			1	200	1	600	1	1500			3	2300
C. BINGU			1	200			3	2150	3	1900	7	4250
Federico JELE			3	0	2	0	3	1500	2	900	10	2400
Jailos KUMBWEZA			2	600	3	600	2	800			7	2000
Seveliano J MAYAYA			7	2550			2	1000	2	1000	11	4550
Hardson MARIKO					1	500	2	1000	2	1000	5	2500
Grand Total	17	9520	49	22600	25	16950	42	29950	29	17900	162	96920

The AMs have order books (provided by Inter aide) which are filled out in triplicate. The community is given a copy, the District (or Inter aide) collects a copy

for monitoring and the AM retains a copy for his own record. If the AM does not work, or drops out, Inter aide takes back the bicycle and tools with the involvement of the Village Head Man (VHM). In order to reward AMs who perform very well, Inter aide is providing them with loans to purchase mobile phones.

To encourage the stocking of spares, as well as enable the retailers to sell the correct parts, Inter aide undertook training, and provided starter packs to retailers as far back as 2001 in some areas. In terms of the continued supply chain, Chipiku import their own spare parts and distribute them from the warehouse to the stores. The other shops sell spare parts purchased and distributed by Inter aide or Badea (Afridev in Lilongwe, and Malda spares in Blantyre). These spares are sold at cost price, and are thus effectively subsidised by the NGOs, which cover the cost of transport and storage, and are able to buy at a lower cost due to their bulk orders.

The budget for building up and supporting this maintenance system for 7 months in Mchinji, 5 months in

Dowa and 2 months in Salima is approximately MWK 7.5 million (USD 52,000).

Box 6 Major handpump maintenance in Kondoole, Mchinji

The water point committee had collected over MK 6,000 and purchases pump rods and a new cup seal following the breakdown of their Afridev pump. The repair, as shown in the pictures below was undertaken by Giles Phiri, the local area mechanic.

He was paid MK 500 for half a day spent in the baking sun, removing even the rising main from the ground.



There are still a number of questions with respect to this system involving Area Mechanics and spare parts dealers, including:

- How much follow-up is necessary?
- How often is retraining necessary, or how often training of replacement Area Mechanics should take place⁷; and
- Should tools and the bicycle be replaced by the Area Mechanic or by the support agency?

Experience from elsewhere indicates that the Area Mechanics are likely to require continued follow-up support for ever if this initiative is not to end up as another temporary fix for Malawi's rural water supplies.

Ideas to improve the support to the Area Mechanics include:

- Monitoring the Area Mechanics by the District Water Office, Traditional Authorities; ADCs and VDCs;
- Issuing the Area Mechanics with IDs;
- Providing more hands-on and refresher training to the Area Mechanics;
- Introducing the Area Mechanic to the community at initial pump installation, or during CBM training.

Several other Districts and some NGOs have started, or tried to start similar initiatives. Table 9 shows how far they have gone, and sets out some of the challenges they are facing. Lack of tooling, not providing transport (bicycle), and poor follow-up are among the main weaknesses of these approaches. The fact that many Districts also repair boreholes, providing free labour and spares, without always a clear distinction in what type of work the Area Mechanics undertake and what is Government responsibility also confuses matters e.g.: *"If funds are available, then we go and repair the boreholes...the problem is that we do not have the funds to repair"* Central Regional Water Board. *"We manage to repair about 20 to 30 boreholes every month"* Dowa District Water Department

⁷ In Mchinji, of the 20 Area Mechanics trained in early 2008, one had died by the November.

Table 9 Support to Area Mechanics by other organisations in Malawi

Organisation (District)	Remarks
Plan (Dedza)	13 Area Mechanics are to be selected and trained to cover two Traditional Authorities. They will be issued with tools but not bicycles and are expected to cover one village development committee area. They will not be paid, but rather provided a “token” for the work from the communities.
JICA (Lilongwe)	Area mechanics were trained. No more information was available during fieldwork.
District Government, later with Inter aide support (Dowa)	28 Area Mechanics were trained in 2006 by the District Water Office and expected to cover an area of about 110km ² . No tools or bicycles were issued and as a result, they did not achieve much. In 2008, Inter aide relocated the Area Mechanics and issued them with bikes and tools. The DWO monitors their performance. They are now working considerably more than before. Area Mechanics submit reports on their work to the District on a monthly basis.
Nkhata-Bay	Thirty Area Mechanics were trained in 2007, and equipped with bikes and tools, but there is “not enough money to call them” back. There seems to have been no follow-up.
Mzimba (AFDB and UNICEF funded)	The project had planned to train 95 Area Mechanics and equip them with bicycles and tools, as well as ensure that 49 shops were selling spare parts. However, the initiative is currently unfunded. This is because responsibility has fallen between two different donors (AfDB and UNICEF). The matter still needs to be resolved.
Kasungu District	Introduced and trained 45 Area Mechanics in 2007 but there has been no follow-up to date. The need for more area mechanics, retraining and sharing of experience was acknowledged by the District assembly. Note that 45 shop owners were also trained and issued with starter packs.

Currently, funding for the work by Inter aide runs out in 2009. Given the encouraging results of this approach, it is recommended that funding to this project be extended for at least another three years. Funding should provide scope for further innovation; including developing a better understanding of how to embed this arrangement within the District Water Office and determining where costs can be saved without undermining impact. The project should be seen as a learning arena for other Districts in Malawi. In order to learn from the work of Inter aide, as well as other Districts following a similar approach, some form of documentation and exchange mechanism should be established.

5.10 Site Selection

Sites were observed where boreholes had been drilled right next to taps, boreholes were placed next to each other, or a rural piped and urban piped water supply criss-crossed (e.g. Matsimbe village, Ntcheu). Justification given for this included “the population is large”; “if the tap breaks at least the community has an alternative water supply”. However, this raises the question: “why should users pay regularly for one service (tap) if there is an alternative?”

Given that access to rural water supplies is calculated by multiplying each source by a number of users (see Definitions on page 5), it is likely that if two water sources exist in one area the population is counted twice. In other areas, where one water point serves a bigger user group, the calculation method results in a too low numbers. Consequently, it is likely that water supply coverage is actually lower than the data suggests.

Figure 12 Working household tap, broken rural tap and disconnected community tap



6 Conclusions

Malawi has made remarkable strides in improving access to safe water supplies in rural areas; access figures are significantly higher than neighbouring countries, as well as sub-Saharan Africa as a whole. The investment by Government, NGOs and donor organisations in rural water supplies over the last 30 years is substantial. Further Malawi has taken a strong stance on handpump standardisation, with good quality pumps (mainly Afridev and Malda) installed throughout the country. Unlike many other countries, spares of the Afridev pump are available in about two or three shops in every district through the Chipiku chain of stores. In some parts of the country, steps have been taken to harness the private sector further, with area mechanics undertaking maintenance and repair of pumps for communities, at a fee. The concept of community-based maintenance is widely accepted by most key stakeholders, although its implementation varies considerably.

However, the non-functionality of some 31% of improved rural water supplies is considered unacceptable by the Government of Malawi, and some of its key development partners. They have recognised that the inadequate and inconsistent operation and maintenance (O&M) of rural water supplies is a major problem, which is the first step on the long journey towards establishing a comprehensive national approach to O&M. The formulation of a compulsory undertaking at the 2008 Joint Sector Review to establish an O&M framework is another step in the right direction.

Based on the findings of this study it is clear there is an urgent need for all organisations operating in the rural water supply sector to have a common approach to O&M. This approach starts with applications for improvements to water supplies by water users themselves, moves on through training and construction and continues through preventative maintenance. There will always be a need for backup support to enable communities to manage their water supplies. In this regard, a common approach needs to be clearly defined (in the form of an O&M framework). It is essential that **all organisations comply with this framework**. The country can no longer afford to allow NGOs undertaking projects with widely different approaches. In this regard, it is important that the O&M framework and accompanying guidelines will be well communicated. The establishment of an

information and communications unit within the Ministry of Irrigation and Water Development may be one way of assuring this.

Sector reforms and decentralisation are not easy transitions in any country, but they offer an opportunity. Clearly, Malawi is still in a considerable state of flux in this regard. The move towards a sector wide approach provides an opportune vehicle for establishing a comprehensive O&M framework. With the process of shifting towards decentralisation still in progress, most of the District Water Offices are inadequately equipped with human, financial and physical resources to fulfil the tasks on hand. A strong and effective O&M system for rural water supplies needs to be embedded at District level. This requires extensive measures to elevate and maintain District Water Office capacity. Not only is on-the-job training required, but also office equipment, vehicles, office space, staff and financial resources are required.

Rural water supplies are also provided to 'win votes', 'curry flavour', 'quickly meeting donor deadlines', and 'pull people towards a particular religious denomination'. These objectives are often not accompanied by adequate construction supervision or community training. Such action is a disservice to the rural population, as well as to the long-term economic development of Malawi as a whole. All water sector providers need to sing the same song. This has to be a song of clear and shared roles and responsibilities with respect to the long-term management and maintenance of rural water supplies.

There is no doubt Malawi is in need of a comprehensive O&M framework for rural water supplies. Such a framework needs to build on the country's strengths, and needs to address the inherent key weaknesses. It has to set out a mechanism of ensuring that high quality, but affordable spare parts can be obtained even in the remotest areas of the country. Skills for maintenance of handpumps and rural piped schemes need to be built, and retained. Communities need to know where they can turn to for minor as well as major repairs. Realistic tariffs, or water user fees, need to be set and paid. Malawi has to break out of the cycle of **new facility-disrepair-rehabilitation**, which does not make sense, given the investment of some MWK 24 billion already made in rural water supplies. Instead, a new paradigm, based on the premise that **prevention is better than cure** needs to take root.

Although, several foundation stones are already in place upon which to build up an O&M framework, the transition cannot happen overnight. First of all, it is essential that the key stakeholders agree upon a vision for O&M in Malawi. Piloting key aspects of the framework in specific districts, in order to learn about the challenges of making this vision a reality, and to demonstrate its viability will be very important.

The authors of this report firmly believe that Malawi can significantly improve the functionality of its rural water supplies if a good O&M framework is developed and adopted by key stakeholders. However, the slogan "*yes we can*" not only needs to be said, and believed in, but also be championed by the Ministry of Irrigation and Water Development.

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Annex 1 List of Persons met

Date	Town/District	Name	Organisation	Function
Central Region				
10.11	Lilongwe	Kiwe L. Sebunya; Amos Kudzula	UNICEF	Chief, Water and Environmental Sanitation; WES Specialist
		Prisca Joan Kutengule	National Water Development Programme	Community Participation Specialist
		Njewa Jomo	Central Water Board	
		Thanasious Sitoro	MoIWD	District Water Officer for Zomba District
11.11	Lilongwe District	Bertrand de Saint Méloir; Fabrice Vandeputte	Inter aide	Project Officer; Country Director
		Mrs Anne Kulumba; Mrs Efness Nakuyere	Water Point Committee: Chibubu, SB/0 7/351 7-6-2001	Member; Secretary
		Ediga Kamangeni	Area Mechanic	
		D.Agwande	Okomatani Shop	
		Chombe Chulu; Julius Masebo;	Baseda	- -
		Shadick Mhango		Mjigo Usafe Manager
		Sinosi Maliano	District Water Office, Lilongwe	District Water Officer
12.11	Mchinji District Lilongwe	Fred Banda	Inter aide	Maintenance Assistant
			Kondoole Village, Mlonyeni	Committee members

		Giles Phiri		Area Mechanic
		Humphrey Munthali	District Water Office	Borehole Maintenance Supervisor
		Kamungu Grey	Chipiku, Kamwendo Trading Centre	
		Martin Moyo; Charles Sheko	<i>Manufacturers of handpumps in</i> Kamwendo Trading Centre	
		James Mambulu	CIDA	Water and Environment Specialist, Malawi-Canada Support Unit
13.11	Dedza District	Hanna Wireless; Ronald Mandila Charles B. Yatina	District Water Office	Water Monitoring Assistant (Boreholes) Water Monitoring Assistant (Boreholes) District Water Officer
	Dedza District	Takasuma Muzunduni Alfred Dimu	Kasumba Traditional Authority	Traditional Authority Chief Clerk
	Lilongwe	Ulemu Chiluzi	Plan	Water and Sanitation Specialist
14.11	Lilongwe	James Longwe; Boyce Nyrenda	WaterAid	Programme Manager Rural Water Supply and Sanitation
	Ntcheu District	Mr Munthali; Mr Mawoko;	District Water Office	Hydrology Officer District Water Officer
	Ntcheu District	Mr Loti	Concern	Community Water Supply Officer
	Ntcheu District	Mrs Fani Muhondo	Mpira-Balaka GFS, Matsime Village	Secretary of tap committee
15.11	Lilongwe	P.B. Kalaria	Kalaria	Manager
	Dowa District	Edward Kolowe	Dowa District Water Department	Water Monitoring Assistant
	Dowa District	Alice Gesani		Area Mechanic


Northern Region				
17.11	Karonga District	Chaponda Aaron	Karonga District Water Department	District Water Officer
		Wilbert Zowani Msiki	Chilumba Town Scheme and Chonanga GFS	Water User
		Mr Ngwira	Chonanga GFS	Scheme Supervisor
		Mr Moyo	Evangelical Lutheran Development Service	<i>Representative</i>
		Ofulu Kalua	Chipiku Chilumba Branch	Manager
18.11	Rumphi District	Sangster MF Nkandwe; Duncan Nyirenda	Church of Central Africa Presbyterian (CCAP) Synod of Livingstonia	Director of Development Department; Deputy Manager Water and Sanitation
		Jeston Mzumima	District Water Office	Acting District Water Officer
		Patrick Swila	District Water Office	Water Monitoring Assistant
		Cerestina Mkandawive	Water User Association, Mkhamanga GFS	Bookkeeper
		Temba Lama Temba Chikulamayende	XXXX TA	Paramount Chief
19.11	Mzuzu Town	Final Mgamba	Regional Water Office	Water Supervisor
	Mzuzu Town	Anne Kumwenda; Patrick Kazembe	World Vision	Programme Manager Nkhata Bay
	Nkhata Bay District	Yvonne Kenani	District Water Office Nkhata Bay	District Water Officer
	Nkhata Bay District	Victor Peter Matayataya	District Assembly Nkhata Bay	Director of Planning and Development (DPD)
	Nkhata Bay District	Khosa Vyalema	Marion Medical Mission	Coordinator
20.11	Mzimba District	Ephram Mbewa	District Water Office Mzimba	District Water Officer
		Alice Phiri; Susan Manda; Irene Nhlemal	Khosolo GFS	Tap Committee Mbulawa Jere Village; Branch Committee Treasurer Ng'ombe chinda Branch; Main committee member

21.11	Kasungu District	James Ngenda	Kasungu District Assembly	Community Development Officer
		Emanuel Bambe	Kasungu District Assembly	Acting District Commissioner
		James Nyirenda	Kasungu District Assembly	Assistant District Environmental Health Officer
		Wiseman Moyo	Kasungu District Assembly	Ministry of Education Desk Officer
		Chawezo Muyandha	Kasungu District Assembly	Acting Director of Planning and Development (DPD)
		Obed Mwalughali	Kasungu District Assembly	Monitoring and Evaluation Officer
Southern Region				
17.11	Blantyre	Josef Mapwesera	Regional Water Office	Supervisor Hydrology
		Tamara Zembeni	DWO	DWO
		Masauko Mthunzi	Concern Int'l	Progr. Manager
		Charles Kachala	World Vision	Progr. Officer
		George Ntala	Pipeco Ltd	Factory Manager
18.11	Thyolo	Davis Bonga	DWO	DWO
	Mulanje	Lester Kumwenda	DWO	DWO
		Fred Kapute	DWO	Water Supervisor
		Loastao Chagunda	DWO	Water Mon Ass't
		Dick Phiri	Plan Int'l	Com. Dev. Facilitator
18.11	Mwanza	Edgar Phiri	DWO	DWO
		Willard Botha	DWO	Water Supervisor
		Josiah Jassie		Area Mechanic
		Christofer Mwale	Action Aid	Progr. Facilitator

		Macclean Chimpeni	Action Aid	Progr. Coord.
19.11	Majinga	James Alex Makwinja	DWO	DWO
	Blantyre	Kanti Gonderiya	Formex	Manager
Key Stakeholders - Lilongwe				
24.11	Lilongwe	Benson Bumbe Nkhoma	African Development Bank	
		Peter Kemp	Chipiku Stores	General Manager
25.11	Lilongwe	Robert Kampala	Water Aid	Country Representative
		Brett Kristina Stevenson		Engineers without Borders
		Jayesh Patel	Chitsiime Drilling	
		Tomothy Gilbo	World Bank	Country Representative
		Adriana F Michiela	Ministry of Irrigation and Water Development	Secretary for Irrigation and Water Development
		Hudgeson Muhezuwa	Ministry of Irrigation and Water Development	Chief Community Water Supply and Sanitation Office
		Oscar Nkhoma	Ministry of Irrigation and Water Development	Project Coordinators (ACGF)
		Boniface Gondwe	Ministry of Irrigation and Water Development	Director of Water Supply and Sanitation

Annex 2 Spare Parts Price Lists

Prices as displayed in Okomatani Shop, D.Agwande


MITENGO YOGULITSILA ZIPANGIZO
ZA
AFIRIDEVU PAMPU
SEPTEMBER 2008

DZINA LA CHIPANGIZO	MITENGO WOGULITSILA	
	K	T
	60	00
U – seal	47	00
O – Ring	190	00
Bush bearing	90	00
Rubber Bobbin	150	00
Rod Centraliser	110	00
Pipe Centraliser	115	00
Cup Seal	820	00
Plunger Body Plastic	1720	00
Plunger Body Brass	385	00
Brass Plunger Connector	1000	00
Rubber Cone	1415	00
Steel Cone	235	00
PVC straight Socket	1810	50
PVC Pipe	1000	00
Hanger Pin	1295	00
Fulcrum Pin	1250	00
Rod Hanger Housing	1480	00
Mild Steel Galvanised Pump Rod	2780	00
Stainless Steel Pump Rod	1200	00
Suction Pipe		

Cylinder Housing only	7300	00
Plunger Rod	1200	00
Foot Valve	1300	00
Foot Valve U - Hook only	600	00
Foot Valve U - Hook + Bolt	680	00
Top Sleeve (collar ring)	240	00
Pump Head Cover only	3000	00
Pump Head without cover	10000	00
Pump Head Complete	13000	00
Pump Handle Complete	8000	00
Pump Pedestal	9000	00
Bolt & Nut M12 X40	80	00
Bolt M16 X 25	80	00
Bolt M10 X 35	80	00
Fishing Tool	1222	00
Socket Spanner	1222	00
Flat Spanner	270	00
Nylon Rope Per Metre	30	00
Nylon Rope 6mm x 64mm	1920	00
Solvent Cement 250 ml	450	00
Solvent Cement 200 ml	420	00
Solvent Cement 100 ml	255	00
Water Guard 200 ml	30	00
Water Guard Wa ufa	10	00
Rubber Flapper	200	00
Mbwezela Chitetezo Tablet	50	00
12L Plastic bucket with Tap	580	00
20L Plastic bucket with Tap	795	00

- Mitengo yomwe okeza Mijigo aziwaza anhu yovomerezedwa ndi ofesi ya MIBGO USAPE
- Komanso mitengoyi itha kusintha pokhapokha ngati mtengo utakwela kowodola

Annex 3 Community Drilling Supervision – Checklist

INTEGRATED RURAL WATER SUPPLY AND SANITATION PROJECT
BENEFICIARY SUPERVISION FORM

DISTRICT..... TA VILLAGE

A. SITE SURVEY AND BOREHOLE SITING

Date of survey.....
Number of crew in survey team.....
Did they carry any machine..... (Yes..... No.....)
Number of sites surveyed.....
Date started..... Time.....
Date finished..... Time.....
Contractor's Team Leader... (Name..... sign.....)

B. DRILLING

Date started.....
Date finished.....
Number of drilling rods used.....
Number of plastic pipes installed..... (slotted..... plain.....)
Pipe capped at the bottom..... (Yes..... No.....)
Water seen after how many rods.....
Number of buckets of gravel pack added (lake gravel).....
Contractor's Team Leader... (Name..... sign.....)

C. DEVELOPMENT

Date.....
Time started.....
Time finished.....
Not done.....
Did clean water come out..... (Yes..... No.....)
Contractor's Team Leader... (Name..... sign.....)

D. PUMPING TEST

Date.....
Time started.....
Time finished.....
Was there stoppage of pumping in between..... (Yes..... No.....)
Contractor's Team Leader... (Name..... sign.....)

E. CIVIL WORKS

Date started.....

Date finished.....

Grass roots removed from around the well.....(yes.....No.....)

Top soil excavated for about 15 cm to 20 cm.....(yes.....No.....)

Two layers of brick or stone placed on the soil.....(yes.....No.....)

Cement grouting inside the pipe (how many bags of cement used).....

Wire mesh (thick like a pen) placed on the brick layer.....(yes.....No.....)

Concrete (sand, quarry stone & cement mixed with water) Mixture: (1:2:4) (Example 1 Bag of Cement with 4 buckets of Sand and 8 buckets of Quarry stone)

Check how the Contractor has done

Number of bags of cement.....

Number of buckets of sand.....

Number of buckets of quarry stone.....

Contractor's Team Leader...(Name.....sign.....)

F. PUMP INSTALLATION

Date.....

Number of rods installed.....

Involvement of community.....(Yes.....No.....)

Spare part kit handed over to community:

Rod centraliser 10 Nos.

Bush bearing set 04 sets

valve bobbin 02 Nos

cup seals/U seals 02 Nos

"O" rings for foot valve 02 Nos

Tools and fishing equipment handed over to community:

Hook 1 No.

Flat spanner 1 No.

Socket spanner 1 No.

Contractor's Team Leader...(Name.....sign.....)

Annex 4 The 1998 study of 17 gravity piped schemes

The 1998 study of 17 gravity piped schemes found that the three most serious problems were:

- Washed out pipes over river and gully crossings;
- Vandalism (stealing of pipes to make hoes, malicious or frivolous vandalism, Bibcocks stolen, valve tampering)
- Pipe breaks and blockages (due to exposed PVC pipe, poor previous repairs to the pipe, tanks not cleaned, lines without enough scour points or air valves, debris and dirt introduced during repair, repair team fails to respond to consumer complaints, consumers fail to report problems, consumers refuse to provide unskilled labour, monitoring assistance no longer walk the pipeline and dense bush makes it hard to walk the lines and find leaks or breaks).

In addition, leaking tanks, tanks without ball valves, silted tanks, blocked intakes as well as leaking pipes and taps was observed. Some design and construction problems were also noted including poorly made crossings, lack air valves and scour points and small pipes.

Kleemeier (2000) noted that the different stakeholders (from tap committees through to the water department) were no longer performing their functions as intended. She concluded that there had been a poor choice with respect to in-kind, rather than cash contributions from the users and that many of the schemes were too big:

- *“Consumers may have worked more on the schemes during the coercive regime of Dr Banda”, but now too much was being expected in terms of volunteer labour (Kleemeier, 2000). Yacoob & Walker (1991), cited in Kleemeier, 2000, pp940) hypothesised that Malawi’s piped schemes would fall into disrepair because they are too costly in terms of time for the community to repair.*
- There are more broken pipes and blockages to repair on large schemes, problem diagnosis is more difficult, distances for committee meetings are higher and schemes lengths take long to walk for inspection.

Kleemeier (2000) concluded that although community groups were good at making small repairs required to keep water flowing, they were poor at preventative maintenance and repair.

More recently, the Rural Water Supply Technical Working Group Paper (2008) adds serious water resources degradation in catchments to the list of concerns. This can be a particular problem with respect to gravity piped scheme intakes. The extent of this problem is not clear from existing documentation.

MoIWD (2008) states that “theft and vandalism of water facilities are a major setback to water and sanitation services delivery”. It points to the need to intensify public awareness and dialogue on the problems and effects of this, and “instil ownership”.

Annex 5 Terms of Reference



THE REPUBLIC OF MALAWI

MINISTRY OF IRRIGATION AND WATER DEVELOPMENT

NATIONAL WATER DEVELOPMENT PROGRAMME RURAL WATER AND SANITATION COMPONENT

TERMS OF REFERENCE

For

**The Development of a National Operation and Maintenance Framework for the Malawi
Rural Water Sector**

May 2008

BACKGROUND

Justification for the Collaboration between UNICEF and Skat Foundation

The Government of Malawi [GoM] through the Ministry of Irrigation and Water Development [MoIWD] has developed a second National Water Development Program (NWDP), which is under implementation with support from several development partners. The program has four components: Urban Water Supply and Sanitation, Town Water Supply and Sanitation, Water Resources Management and Rural Water Supply and Sanitation.

The NWDP aims at building capacity of key stakeholders at community, district and national levels; improve access to potable water supply and improved sanitation services; support systems for regulation and monitoring; create effective management structures for piped water supply systems; and facilitate/strengthen sectoral coordination. Implementation of the NWDP is in line to the Malawi Growth and Development Strategy [MGDS].

The GoM has also made a decision to adopt a Sector Wide Approach or SWAPs, as the mode for development planning, implementation, monitoring and evaluation for all sectors. . SWAPs are robust, government-led processes where all significant sector investments are channelled towards the same objectives and are following a consistent strategy that is guided by a consolidated investment plan.

One of the key challenges for Rural Water and Sanitation sub-sector has been the multiplicity of O&M modalities usually based on projects run by different stakeholders. There have been cases where the modalities of one project works against another especially in the establishment of supply chains for spare parts. Some agencies provide free or subsidized spare parts while others are trying to build privatised retail networks, which obviously cannot operate in parallel with free or subsidised parts in the same market.

There is also need to define clearly;

- the roles and responsibilities of the various stakeholders and institutions
- Quality control measures for both maintenance services and spare parts in particular.
- How to promote and manage/regulate the private sector especially in provision of maintenance services
- Financing mechanisms
- How to deal with maintenance beyond community capacity
- Capacity building requirements at all levels including committees and repair crews

OBJECTIVES

The overall objective of this agreement is;

To support the Malawi Water and Sanitation sector in the development of an Operation and Maintenance Framework for the Rural Water supply sub-sector that will harmonise the existing discreet project-based O&M systems currently under implementation in the country and in doing so, support the Government in the implementation of its decision to adopt sector wide approaches to development.

SCOPE OF WORK

The agreement partner shall work under the Director of Water and Sanitation, MoIWD liaise closely with the NWDP, to support and facilitate the sector to;

Desk Study

This component includes the review of all sector relevant documents including documents from other related ministries and private sector. Such documents include sector policy and strategy papers, information on institutional settings, Investment plans, information on ongoing and planned projects, data of pumps/systems installed, monitoring reports, and data on pump production. Whatever necessary additional documentation for analysis or clarification will be made available to the agreement partner.

- Prepare an inception report incorporating a work plan with a detailed road map leading to the development of an O&M framework.

Field Study, Data collection

The field data collection will start with a briefing/consultation session with MoIWD and the key sector partners. During this one-day workshop, the remaining questions concerning the scope and concept of the study will be clarified and the common interpretation of the TOR will be defined. The workshop gives people a chance to air their grievances at the start and have an input into the process. A detailed mission programme will be agreed on. It is expected that this consultation workshop would take about one day.

The field visits will include a survey of local industries, traders, and merchants to assess capacity available within the private sector to service hand pumps or pumps spares and deliver them near to users – rural communities.

- Examine the status and performance of existing O&M structures for rural water, and make recommendations to ensure improved sustainability of systems. The capacity required for provision of the necessary technical backup support to the O&M framework at regional and district level will be reviewed. Therefore, the field visits will include visit to selected rural water supply projects in three regions and discussions with all stakeholders (villagers, local private industries, regional and district-level government personnel, project personnel, NGOs etc.) so that their views can be adequately integrated into the study.
- Examine the effective demand for O&M services, at all levels (users of the facilities, District Coordination Teams,, NGOs and private sector) including spare parts supply, availability of technical support for major repairs, training needs at all levels, monitoring of functionality.
- Estimate costs for successful O&M including cost for:
 - Minor repairs, Spare parts, including transport of mechanic
 - Major repairs and borehole maintenance
 - Monitoring performance of facilities
 - Mechanisms for conflict & problem resolution
 - Social facilitation, retraining mechanics
- Identify factors and establish principles that encourage successful provision of O&M services through the private sector, regulated by the government.
- Develop strategies and action plans for successful privatization of the O&M services taking into account transitional arrangements.
- Plan, organise and conduct regional and a national consensus building workshop(s) as appropriate in order to solicit and ensure that the views and opinions of all stakeholders are given a fair hearing. This includes follow up on recommendations from workshops and meetings.
- Identify possible need for technical support to the private sector and investigate incentives required for local production to take off
- Identify the assistance required for the capacity building of all players in the recommended O&M framework
- Make recommendations for national policy/principles and guidelines how to regulate/monitor the implementation

Submit a report with all findings conclusions and recommendations

Three regional consultative workshops on O&M with all stakeholders

The workshops will take place in Blantyre [South], Lilongwe [Central] and Mzuzu [North] to gather views from a wider audience. The objective of these workshops will be to discuss the Stage 1 Report and to agree on an O&M framework. The inclusion of all stakeholder in the decision making process is

important as it will enhance ownership of the outcome and thus adherence to the framework. It should be noted that a framework on paper is insufficient, but needs to be operational right down through local Governments and NGOs to water users.

Methodology

It is proposed that two international Skat Foundation staff members shall carry out the work, supported by national resource persons from MoIWD and one NGO. (hopefully MoIWD can offer two professionals and Interaid can place one maintenance officer into the consulting team as support for the international project partners).

The consulting team will jointly prepare the mission and the inception report including the first consultative workshop in Lilongwe. The first field assessment will be carried out in the Central region by the full team to establish the final approach and methodology. For the second part of the field study, the team will split up into two groups. One group will visit South and the other group will cover North. After the field study, the full consulting team will reassemble and prepare the key findings and recommendations for the national O&M workshop.

The international Skat staff members will be responsible for the preparation of the O&M framework (after receiving comments from all key stakeholders) with support from the local resource persons.

OUTPUTS

The output should be the Publication of the O&M framework for Malawi that includes but not limited to conclusions and recommendations covering the following areas:

- Proposals for delegation of decision-making power for integrated management of RWSS systems to the lowest possible level
- Proposals for planning and scheduling of construction work so that there is full engagement with the end users (at a suitable pace). Minimum requirements with respect to community sensitisation, mobilisation and training before and during construction (or incremental improvements) have taken place. Gender considerations should be included.
- Proposals how legal ownership of facilities and land can be realised
- Recommendations for the most appropriate arrangement to ensure sustainable O&M services including cost-sharing proposals.
- Defining roles of communities/local assemblies and the interfaces between them and their supporting agencies (Works departments, etc.) as well as the private sector Indicating realistic and practical Cost sharing arrangements between all stakeholders
- Assessment of strengths and weaknesses of various O&M options
- Tools for monitoring (annual M&E inspection system) and standardization
- Concise arrangements for the supply chain for spare parts and other maintenance services.
- Power point presentation of the framework for future dissemination
- Camera-ready document for printing and publishing
- National workshop, consensus workshop to deliberate and endorse the framework ([half day in Lilongwe) Endorsement form ministerial level should be sought.

PERIOD OF AGREEMENT AND WORK PLAN

It is expected that this assignment should be completed within a 14 weeks period after signing of the contract.

Work plan

Activities	Local resource Person (Days)	International SKAT Staff (Days)
Contract signed		
Desk reviews, Preparation initial Workshop	2	4
Arrival, including travel days		1+1
Inception workshop in Lilongwe and final mission planning	2	2+2
Activities in Malawi; visit industries (potentially to be involved) Field visits to 3 regions; North; South and Central: regional consultative workshops in South and North; interviews and meetings with local traders (involved in supply chain or), NGOs, Church's leader, administrators & local authority, communities.	24	24
Prepare key findings and recommendations for the national O&M workshop. The Skat staff members shall make a presentation on preliminary findings before finalization of the reports (expected outputs).	3	3+3
One-day national workshop to present and discuss key findings & recommendations The national O&M workshop will involve, national and local government staff, private sector, and other relevant stakeholders and could take a day. Endorsement from ministerial level will be sought.	1	1+1
Return (travel)		1+1
Prepare and submit final draft O&M framework, be submitted within two calendar weeks		4
Preparation of final framework (after receiving comments from all key stakeholders) The Final Report should be submitted two weeks after the comments have been received.		3
An electronic power point O&M framework presentation for future dissemination		1
TOTAL	44	52

Activity	Preparation	Month 1				Month 2				Month 3				Month 4			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 PCA signed																	
2 Preparation assignment, Desk review	■	■															
3 Travel Zurich-Lilongwe			■														
4 Inception Workshop, work planning				■													
5 Field Study Central					■												
6 Field Study North						■											
7 Field Study South							■										
8 Preparation Key findings and National workshop								■									
9 National O&M Workshop									■								
10 Travel Lilongwe - Zürich										■							
11 Preparation final Draft											■						
12 Preparation final Framework												■					
13 Preparation electronic Presentation													■				

■ Activity by MoIWD/UNICEF
■ Activity by SKAT

Description of SKAT Foundation

Skat Foundation is a non-profit aid organization officially registered in Switzerland as a foundation.

The foundation aims:

- to foster sustainable development processes, which improve the living conditions of disadvantaged groups, especially in developing countries and countries in transition;
- to promote mutual learning, knowledge sharing, capacity building and disseminating of lessons learned with the specific objective to strengthen its partners through enhanced and equitable access to knowledge.

The foundation may support, promote, organise and execute, or be contracted to execute a mandate (in trust), all the measures and projects that are in compliance with the foundation's objectives.

Skat Foundation will ensure the execution of the above project according to the timetable, provided the inputs by UNICEF can be made available in time. Erich Baumann will be assigned as the task leader.

AGREEMENT REQUIREMENT

The agreement will run for an initial period of 2 months but with a possibility of extension at the request of the MoIWD and UNICEF.

The Skat staff member should have:

- an advanced degree(s) in a field relevant to the WES sector, such as environmental or public health, engineering, social science, or economics;
- ten years of relevant experience in international development, including experience in the water supply and sanitation sector, hand pump and other rural water supply technologies
- proven work experience in developing countries;
- Ability to integrate contributions from different disciplines to formulate strategies and viable implementation sequences
- Excellent understanding of government systems, the WES sector issues/policies, how they fit in broader country development challenges, and trends in the sector's environment (decentralization, privatization, etc.);
- Ability to work with partners, to influence without taking over, advise on politically difficult reforms, and to deal sensitively with others in a multi-cultural background; and
- Outstanding listening as well as verbal and written communications skills and the ability to express complex strategies in simple and actionable terms
- Excellent communication skills, with experience of delivering high quality reports

It will be carried out with full consultation of the various stakeholders (central government and local governments, development partners, user community, private sector, management staff and others). The project partners will therefore be required to organise consultative workshops to discuss and attract comments from major stakeholders.

Fluency in both written and spoken English is a must. Knowledge of a local language will be an added advantage.

SKAT is responsible for all work and services which its personnel, and any contractors, perform. It affirms that its employees and any contractors, also technical experts and staff members, meet the standards of qualification and technical and professional competence necessary for the achievement of the Project objectives. SKAT will ensure that all relevant national labour laws are observed.

The Skat staff members foreseen for this assignment will be Erich Baumann and Kerstin Danert. The CV of both staff members are attached to the TOR.

Inputs and Information to be provided by Client

- MoIWD and UNICEF will establish a small working group
- Local transport and logistics will be made available by UNICEF
- Information on MoIWD Sector Policy, institutional settings, installation and monitoring reports of hand pumps will also made available.
- All relevant documents

REPORTING

- The project partner will formally report to the Director Water Supply and sanitation. The project partner will maintain links with UNICEF but mainly on personal administrative and /or contractual issues.
- The project partner will in addition work closely and collaborate with other sector stakeholders from other Ministries, development partners, the private sector and local governments.