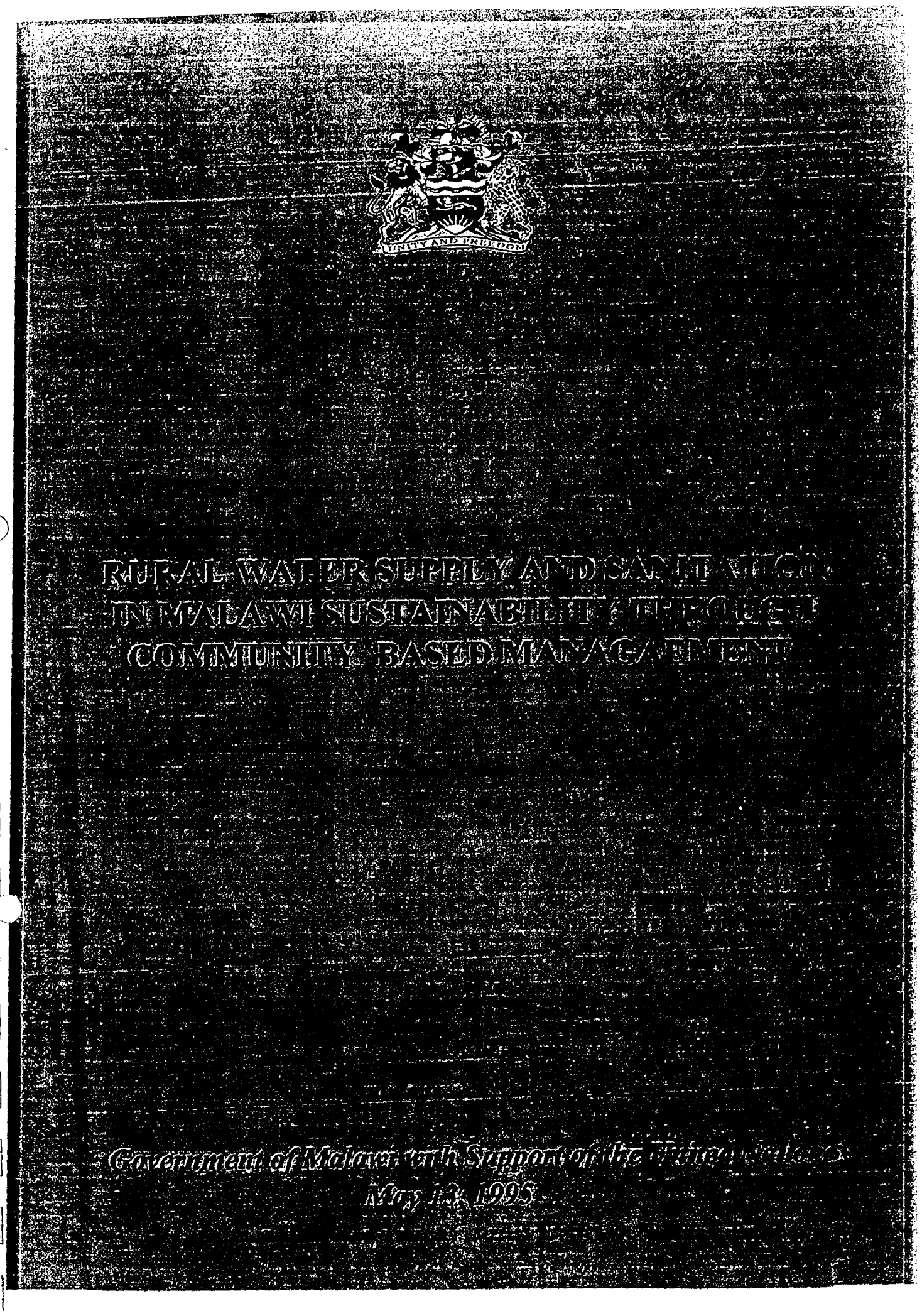
UNITY AND FREEDOM
RURAL WATER SUPPLY AND SANITATION
IN MALAWI SUSTAINABILITY THROUGH
COMMUNITY BASED MANAGEMENT
Government of Malawi with Support of the United Nations
MAY 23, 1995

RURAL WATER SUPPLY AND SANITATION IN MALAWI
SUSTAINABILITY THROUGH COMMUNITY BASED MANAGEMENT

SECOND DRAFT (13 MAY 1995)

Government of Malawi with the support of the United Nations

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EXECUTIVE SUMMARY

Malawi is ranked as one of the poorest countries in the world with also one of the highest population growth rates (3.3% per annum) and under five child mortality rates (245 deaths per 1000). The estimated population of 10 million is 85% rural and makes Malawi one the most densely populated countries in Africa. The combination of this demographic trend and periods of below average rainfall is exacerbating the impact of drought both in terms of malnutrition and environmental degradation.

In 1994 Malawi emerged from 30 years of one-party government following its first multi-party democratic elections. The new government has show a strong commitment to addressing the urgent needs of the rural poor, particularly the lack of access to safe drinking water in a sector where the effective coverage is only around 43%.

The rural water and sanitation sector faces a set of major constraints:

- inadequate investments
- lack of clear sector policies, strategies and workplans
- lack of an established hydro-environmental framework in which to develop water resources
- lack of guidelines and experience at district level
- poor operation and maintenance of facilities
- weak co-ordination mechanisms
- inadequate integration of sanitation and hygiene with water supply
- weak community involvement in planning and operation and maintenance of facilities.

This sector review attempts to address these problems and propose strategies and actions leading to an outline programme for the sustainable delivery of rural water supply coupled with improved sanitation and hygiene practices.

The review also includes an analysis of the financial mechanisms for the proposed National Water Development Project (NWDP) and Malawi Social Action Fund (MASAF). These proposals indicates that:

- only 14.7% of the NWDP $100 million draft proposal is earmarked for rural water supply and nothing for rural sanitation.

- under the NWDP draft proposal 1.5 million people are expected to be covered in 5 years: however, the funds available appear only to be enough for about 850,000 which means that only 17% of the roughly 5 million presently not served or under-served rural people would gain access through boreholes in the NWDP.

- it is still unclear how the rural population will access MASAF funds or how much of the $US 40 million available will be used for rural water and sanitation.

The programme outlined in this review presents the activities required to both sustain and accelerate the provision of rural water and sanitation services. The key strategies for sustainability are to:

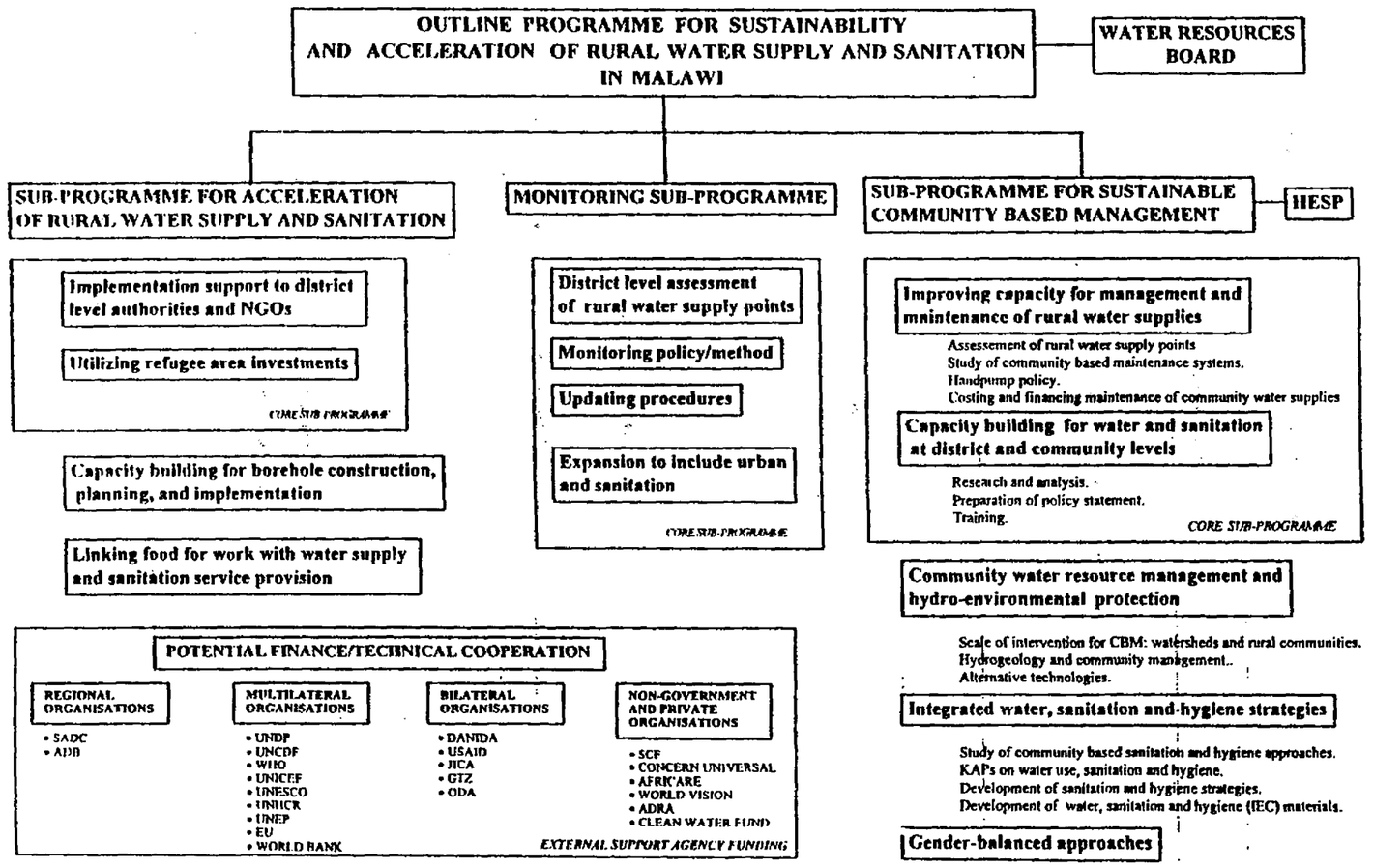
- identify and promote approaches to community based management (CBM) for the maintenance of rural and peri-urban water supply
- develop and promote effective environmental sanitation and hygiene strategies which are well integrated with water supply interventions
- strengthen district level capacities to support communities in their water and environmental activities using gender-balanced approaches.

The key strategies for accelerating coverage are to:

- strengthen central/ regional government hydrogeological mapping, baseflow assessments (for gravity schemes) and drilling capacities to provide water in a more cost-effective fashion
- support district level initiatives to implement water and sanitation projects

  incorporate UNHCR handpump installations in former refugee areas into the national rural water and sanitation programme
- increase sanitation coverage in food deficit areas through food for work.

A summary diagram of the programme is presented below.


OUTLINE PROGRAMME FOR SUSTAINABILITY AND ACCELERATION OF RURAL WATER SUPPLY AND SANITATION IN MALAWI
WATER RESOURCES BOARD
SUB-PROGRAMME FOR ACCELERATION OF RURAL WATER SUPPLY AND SANITATION
Implementation support to district level authorities and NGOs
Utilizing refugee area investments
CORE SUB PROGRAMME
Capacity building for borehole construction, planning, and implementation
Linking food for work with water supply and sanitation service provision
MONITORING SUB-PROGRAMME
District level assessment of rural water supply points
Monitoring policy/method
Updating procedures
Expansion to include urban and sanitation
CORE SUB-PROGRAMME
SUB-PROGRAMME FOR SUSTAINABLE COMMUNITY BASED MANAGEMENT
HESP
Improving capacity for management and maintenance of rural water supplies
Assessement of rural water supply points
Study of community based maintenance systems.
Handpump policy.
Costing and financing maintenance of community water supplies
Capacity building for water and sanitation at district and community levels
Research and analysis.
Preparation of policy statement.
Training.
CORE SUB-PROGRAMME
Community water resource management and hydro-environmental protection
Scale of intervention for CBM: watersheds and rural communities.
Hydrogeology and community management..
Alternative technologies.
Integrated water, sanitation and hygiene strategies
Study of community based sanitation and hygiene approaches.
KAPs on water use, sanitation and hygiene.
Development of sanitation and hygiene strategies.
Development of water, sanitation and hygiene (IEC) materials.
Gender-balanced approaches
POTENTIAL FINANCE/TECHNICAL COOPERATION
REGIONAL ORGANISATIONS
• SADC
• ADB
MULTILATERAL ORGANISATIONS
• UNDP
• UNCDF
• WHO
• UNICEF
• UNESCO
• UNHCR
• UNEP
• EU
• WORLD BANK
BILATERAL ORGANISATIONS
• DANIDA
• USAID
• JICA
• GTZ
• ODA
NON-GOVERNMENT AND PRIVATE ORGANISATIONS
• SCF
• CONCERN UNIVERSAL
• AFRICARE
• WORLD VISION
• ADRA
• CLEAN WATER FUND
EXTERNAL SUPPORT AGENCY FUNDING

1. Introduction

1.1 Country Background

Malawi is a small land-locked country with a surface area of some 120,000 km^2 whose physical settings and associated hydro-environmental systems are dominated by the configuration of the rift valley that runs along the country's entire length. A map of Malawi is presented in Figure 1. The lakes in the Malawi rift occupy some 20% of Malawi's total area. With the exception of the eastward flowing catchments draining into Lake Chiuta and Lake Chilwa in the south-east, all Malawi's drainage enters the Lake Malawi, Lake Malombe and Shire Valley catchment. Rainfall inputs to Malawi's hydrological and hydrogeological systems vary from below 400 mm/yr in the floodplain of the Shire in the south to over 2,000 mm/yr on the northern plateaux.

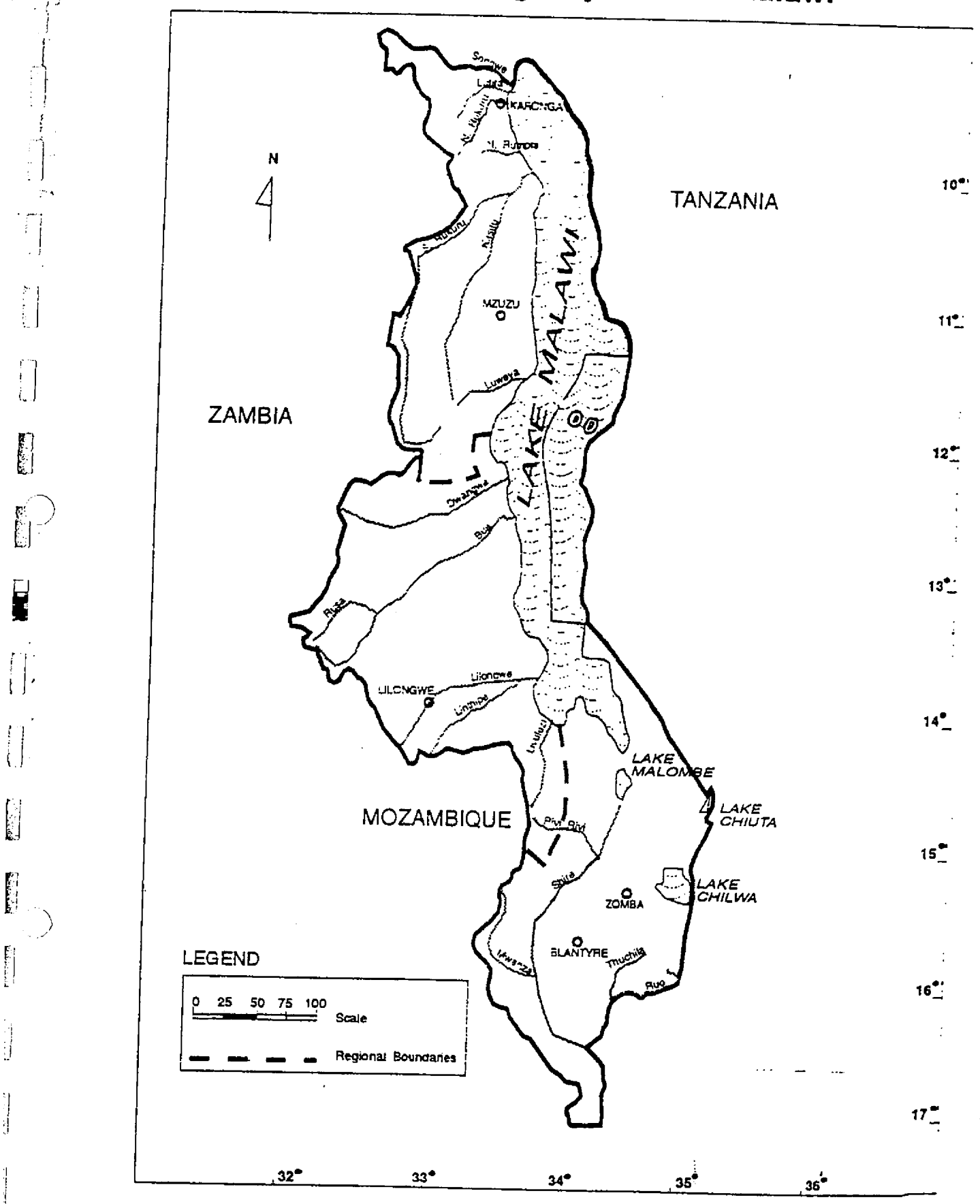
In 1994, the country emerged from a thirty year period of one-party government following the first multi-party general elections. The present Government has shown considerable political will to address basic social needs. A Poverty Alleviation Programme (PAP) is currently being designed to address urgent poverty issues. Access to safe water supply and sanitation is considered a priority area within this programme since it is expected to yield significant health and socio-economic benefits.

The socio-economic indicators of the country provide a picture of one of the poorest countries in the world and indicate a rapidly deteriorating standard of living, health and welfare. In 1993, it was estimated that more than 50% of Malawi's population live below the poverty line. More recent estimates suggest that this figure may have risen to 60-70%. The economy is based on agriculture which contributes on average 34% of the GDP but is a productive sector that suffers from drought. The gross domestic product declined by 12% in 1994 and the country has to depend on external assistance for over 80% of its development expenditure.

Population has grown from 5.5 million in 1977 to an estimated 10 million in 1994 and adverse demographic growth and distribution trends within rural and urban areas are putting a tremendous strain on the country's resources. This includes a significant refugee influx which is estimated to have peaked in 1991 at approximately 1 million. The national population growth rate is currently estimated at 3.3% per annum but shows significant regional and rural/urban disparities. Eighty-five percent of the population lives in rural areas and is primarily engaged in agriculture.

Fertility rates of 7.6 births per woman are cited and children under the age of five are estimated to constitute 25% of the total population. However, the under five mortality rate is one of the highest at 245 deaths per 1000. The major causes of child mortality among in-patient children are: malaria (19%), malnutrition (17%), anaemia (13%), pneumonia (13%), measles (11%), diarrhoea (8%), peri-natal (4%), and other (15%). During the 1980s and 1990s, HIV infections have become widespread in Malawi. It has already become a leading cause of death in people aged 20-40 years with many cases not reported or misdiagnosed.

Major Drainage System of Malawi



Water supply and sanitation is considered to be a basic right by the Government of Malawi (GOM) which is anxious to see accelerated coverage of basic provisions to the poor in order to promote human and economic development.

1.2 Mission Objectives

At the request of the President of Malawi, a UNICEF co-ordinated Water and Environmental Sanitation mission visited Malawi during the period 10-17 November 1994 to identify areas of support. One of the recommendations of that mission was that a UNICEF co-ordinated inter-agency mission should study and recommend policies and strategies for rural and peri-urban water supply and sanitation. The objective of this mission was to:

- review the current status of rural water supply and sanitation identifying the reasons for non-functioning of a large number of such facilities:
- suggest sustainable strategies for the acceleration of service coverage through the combination of Community Based Management (CBM) and the implementation of the Hygiene Education and Sanitation Promotion Programme (HESP);
- develop strategies on how rural communities can access the proposed Malawi Social Action Fund (MASAF) for water supply and sanitation.

2. Review of Current Status of Rural Water and Sanitation

2.1 Approaches to Rural Water Supply and Sanitation in Malawi: The Past to the Present

Malawi's rural water supply and sanitation has relied on a mixture of dug wells, boreholes and piped gravity systems. The first organised programme of dug well construction were started under Colonial Development Schemes. Over 400 were completed between 1931 and 1939 and equipped with windlass and buckets. The first boreholes for rural water supply were also initiated in the 1930's under Colonial Development Schemes. Boreholes were drilled by private and government drilling rigs with up to 500 per year being completed between 1969 and 1972 when large scale agricultural development projects were started up. Most were equipped with handpumps.

It was not until the mid-1970's, under the then Ministry of Community Development and Social Welfare, that a low-cost programme of rural water supply was initiated with the express purpose of increasing coverage in rural areas. This included small gravity piped systems and shallow well construction equipped with locally produced handpumps (Malawi Marks I-V). Small construction teams moved from village to village, fed and accommodated by the villagers themselves. Small springs and streams were developed where topography allowed small piped systems to be installed. Shallow groundwater circulation was exploited, usually in dambo areas, to provide dry season supplies. and the shallow hand-dug wells

capped during the wet season when the dambo bottom became inaccessible and alternative local watercourses could be relied upon.

By 1977 the Ministry of Community Development and Social Welfare had published a handbook on rural piped water projects (Robertson, 1977). In 1982 the Department of Lands Valuation and Water had issued a 650 page manual on integrated projects for rural groundwater supplies (DLVW, 1982). There had also been some degree of handpump standardisation with British Climax pumps being used for deeper water tables, and locally manufactured deep-well Maldev pumps and direct action Malawi pumps for shallow water tables.

Box 1

The Upper Livulezi Integrated Groundwater Project

This project in the Southern Region has served as a pilot for Malawi's CBM. Previously the valley was served by surface water and hand dug wells with direct action Mark V handpumps. Surface water sources were becoming polluted due to settler encroachment. There had been a co-ordinated planning and execution of hand-dug and drilled boreholes and construction standards and maintenance were poor. By the early 80's the project established a method of low-cost borehole drilling((shell and auger rigs) and attempted to standardise on locally produced handpumps for both shallow and deep boreholes. As a result the Upper Livulezi project completed 24 pilot low cost boreholes with locally manufactured VLOM handpumps and a programme of CBM. The project was then taken over by the UNDP/World Bank project to test the development of a range of handpumps. Whilst the Afridev was developed 10 years later, the boreholes in the project area are still served by a diverse range of old and new handpumps, but with little or no stock of spare parts locally available.

Box 2

The DANIDA financed Karonga Lakeshore Integrated Rural Groundwater Supply Project (KIP) on the shores of Lake Malawi in the Northern Region completed installation and hand-over to communities of 300 water points in March 1991. Operation and maintenance of the water points under VLOM has been financed on a declining scale for the subsequent four years.

The project is cited as a modern example of how transition of spare parts distribution to the private sector may be effected. While the system of spare parts distribution through local merchants is seen to work, it cannot be said to be wholly commercialised since procurement of the spare parts still has to occur through the Water Department. However a 1994 evaluation reported that most Village Water and Health Committees '....did not buy spare parts in advance because it was impossible to tell which part would wear out next...'. The same report also recommends "...There must be a mechanism whereby individuals who embezzle funds can be dealt with by users..". Under these circumstances the project design may deserve some re-examination.

Soakaway installation and maintenance is poor and ownership of the water points remains an issue. The Village Water and Health Committee/Pump Committee/Pump Attendant/ Maintenance Assistant systems seems overly complicated and sometimes results in disagreement and inaction. Overall, however, the project remains one of the most successful examples of CBM in Malawi.

As external assistance to rural and urban water supply schemes became a feature of poverty alleviation and drought relief work during the 1980's and early 1990's, Malawi has taken on a mix of central government, multi-lateral, bilateral and NGO input, largely in the form of capital assistance for borehole construction and handpump installation. In principle the national population of boreholes and handpumps is operated and maintained under a system of centralised borehole maintenance administered by the Groundwater Section of the

Water Department. The system is supported largely by recurrent budget from central government and relies on a network of District units staffed by supervisors and technical operatives. Most units lack any transport to monitor and effect pump repairs. The units attempt to serve up to four types of nationally adopted handpumps but the distribution of spare parts is haphazard and the units are not necessarily relied upon to maintain stocks of spares.

Government's present approaches to rural and urban water development involve the use of Area Based Programmes together with HESP/VLOM projects when supported by NGOs. Both are co-ordinated by District Development Committees (DDCs) who co-ordinate inputs from the ministries of Health, Education, Community Development and Local Government and call forth capital drilling and handpump installation work through the Water Department. In addition large scale regional borehole drilling and rehabilitation projects funded by donors establish new coverage and rehabilitate and replace unserviceable boreholes and pumps. This represents an essentially reactive approach to rural water supply and sanitation coverage and cannot be said to be the result of careful policy and strategy implementation.

A CBM unit does exist in the Ministry of Irrigation and Water Development. The unit does not operate efficiently in the absence of a proper structure and lack of staff and financial resources. At the national level, there is the CBM co-ordinator reporting to the Deputy Controller in charge of water resources. Supporting the national CBM co-ordinator are the mechanical engineer (supported by UNDP) and the CBM Advisor (supported by SCF-UK). A counterpart mechanical engineer has just been recruited on a non-established post to support the unit. There is no representation of CBM at regional level except in the Southern Region which has a Regional CBM co-ordinator and three supervisors recruited specifically for the UNDP/UNCDF Boreholes Rehabilitation Project. All the districts in the country are manned by one or two water monitoring assistants. CBM needs to be upgraded to a higher rank, preferably at Deputy Controller's level.

2.2 Water and Sanitation Coverage

Water supply coverage in Malawi is estimated to be only about 62 per cent (85 per cent in urban and 58 per cent in rural areas). These basic coverage estimates, however, have to be considered with caution since there are clear indications of an inherent over estimation of the actual coverage. Of the 58 per cent of the rural population with access to water, 18 per cent are served by gravity systems, 31 per cent by boreholes, and another 9 per cent by shallow wells. Of these boreholes and wells, there have been various estimates of the number out of operation, malfunctioning, and/or dry because of an extended drought, however 25 per cent would seem realistic. On this basis only 43 per cent of the rural population have access to an acceptable supply of water on the basis of government standards for consumption (27 l/c/day a distance of 0.5 km from the water point. This represents almost 5 million rural residents at health risk and seriously socially constrained due to inadequate services. Malawi urgently needs to find ways to accelerate coverage of water supply to a rapidly expanding rural population. Government is attempting to undertake a programme of decentralisation in the provision of services as a means of achieving this. The breakdown of types of water service by district and region is presented in Table 1.

In the urban areas information shows significant differences in the levels of water supply service coverage as in Mzuzu and Zomba where only 57 per cent of the population has access to a safe water supply while in Blantyre, the country's largest city, almost all the population has access. Clearly a question of disparity within the urban sector has to be addressed. The 15 per cent of the urban population unserved corresponds to approximately 225,000 people or about 10 per cent of the total unserved. Therefore of the approximately 5 million people without access to an adequate and safe water supply, over 90 per cent are rural. Under such conditions, without rural water supply being treated as a priority issue, and without finding solution to the constraints to sector development in rural areas, the water supply problems of the country cannot be tackled.

Box 3

The present status of rural water supply schemes

Field inspections reveal a sobering picture. Piped gravity systems are providing an intermittent service after a poor rainy season. Some of the more distant water points in the Mpira-Balaka rural piped scheme are only functioning at reduced pressure for 2 or 3 days per week as water rationing for the rural consumers are brought in. Nearby handpumps are taking the strain but dam storage levels are below normal and the scheme is operating at half its bulk supply capacity (400 m3/hr). More importantly, recent political lobbying has resulted in cessation of rural consumer contribution to the labour intensive cleaning of filtration plant (self-help perceived as exploitative).

At the on-going Nestdale Memorial Project based in Nsanje, record keeping and monitoring appears to be weak. Co-ordination of project and Water Department borehole maintenance activities are achieved through the District Development Committee. Although health targets are not perceived as useful by the project team (it would be more sensible to aim at water and sanitation coverage), it was stressed that HESP should start before borehole drilling/installation. While good co-operation and integration of Government, UNHCR and Nestdale project water points appear to have been achieved at district level, it is probably the case that self-financing of rural schemes is inhibited by government funding mechanisms and maintenance arrangements. However, the involvement of women in VWHCs has been a strong feature of the project.

The Chikwawa HESP/VLOM project supported by CONCERN-Universal, provides a model of a transition arrangement with good animation through village health committees. Boreholes and handpumps rehabilitated under the UNDP/CDF supported 1000 borehole rehabilitation project in the southern region were visited. The high cost of Afridev spare part kits (MK 138) as compared with the propensity of committees to pay was highlighted. The handpump committees were typically only able to raise sums in the order of MK 50-80 after 12 months of contribution.

Rapid urbanisation is also a cause for concern. The urban population growth rate is currently estimated at 6.1 per cent, between 4.2 per cent in the case of Blantyre and 10.6 per cent in the case of Mzuzu. The majority of the urban population growth comprises people migrating from the rural areas. The National Water Resource Master Plan in 1986 estimated that between 50 and 80 per cent of urban/semi urban residents lived in peri-urban areas accommodated in "traditional housing." These people normally constitute the poorest sector of the urban population and are by far the majority of the urban unserved. The growth rates of some of the peri-urban communities around Lilongwe have been estimated to be as high as 15 per cent. In addition to those currently unserved, population increase could mean an additional 1.5 to 2.2 million people without services by the year 2002.

Box 4

The peri-urban communities

Current policy is not yet clear on how the squatter settlements around the major towns are to be served with improved water and sanitation facilities. In Lilongwe and Blantyre they are high density, physically constrained communities of many thousands or tens of thousands (e.g., Chinsapo 1&2 and Ntandile). The bigger ones such as Chinsapo are only now served by a high density of Communal Water Kiosks (1 per 150 households) or with no service at all. Pit latrines are associated with many households and shallow wells and boreholes may be used for washing water and potable water if no nearby kiosk exists. The combination of pit latrines and shallow groundwater poses significant perennial public health risks and all communities suffer from elevated incidence of water-borne disease during the rainy season.

The service to these communities has been co-ordinated by District Councils who have provided some handpumps. Lately the use of kiosks and their committees with subsidised bulk water rates from municipal supplies have provided an effective solution in some areas.

It is currently estimated that 64 per cent of the population have access to some form of sanitation, although only 9 per cent are served through a sewer connection, septic tank or improved latrine. There is, as in the case of water, a large discrepancy between the levels of rural and urban services. In the urban areas 90 per cent of the population has access to some form of sanitation system, and 30 per cent are served by a sewer connection, septic tank or an improved latrine. In the urban areas 36 per cent of households shared facilities.

On the other hand, in the rural areas only 60 per cent of the people have access to some form of excreta disposal, and only 6 per cent are served by an improved latrine. Most latrines in rural areas are of very rudimentary construction. If these unimproved latrines are considered as unacceptable, requiring upgrading through the application of the sanplat or other improved technology, only 6 per cent of the rural population may be considered to have a satisfactory level of service.

As in the case of urban water supply there is disparity between the levels of coverage and the quality of sanitation services among urban communities, albeit not so marked. In Blantyre and Lilongwe about 25 per cent of the population have a sewer connection or a flushing toilet connected to a septic tank, while in Zomba the proportion is a little over 40 per cent.

By considering that 30 per cent of the urban, and 6 per cent of rural population served by a desirable means of excreta disposal would indicate that in total there are around 8 million people in Malawi in need of an improved system. Of these over 7 million are rural residents. Therefore as for water supply the thrust of solving the sanitation problems of the country will have to focus on the rural areas to significantly improve coverage.

Table 1 : Population Served by Technology and District

District	Total Population (000's) (projectd to 1996)	Population Served by Borehole		Population Served by Rural Gravity Systems		Population Served by Municipal Systems		Total Population Served	
		(000's)	(%)	(000's)	(%)	(000's)	(%)	(000's)	(%)
Region North									
Chitipa	134.2	30.5	22.7	89.5	66.7	5.0	3.7	125.0	93
Karonga	205.3	93.75	45.7	64.5	31.4	25.5	12.4	183.7	90
Rumphi	131.6	28.0	21.3	62.0	47.1	12.9	9.8	102.9	78
Mzimba	601.5	153.0	25.4	100.5	16.7	67.5	11.2	321.0	53
Nkhata Bay	191.9	15.75	8.2	7.0	3.6	9.2	4.8	31.95	17
Total (North)	1264.5	321.0	24.66	323.5	33.1	120.1	8.38	764.6	56
Region Centre									
Kasungu	448.6	84.0	18.7	0	0	16.3	306	100.3	22
Nkhota kota	219.2	59.0	26.9	42.5	19.4	0	0	11.5	46
Salima	262.3	105.0	40.0	0	0	10.6	4.0	115.6	44
Dedza	571.0	171.25	30.0	2.6	0.5	24.58	4.3	198.43	35
Ntcheu	497.5	142.0	28.5	307.0	61.7	5.5	1.1	454.5	91
Lilongwe	1 354.4	351.0	25.9	0	0	231.3	17.1	582.3	43
Mchinji	346.5	116.25	33.5	37.0	9.2	7.1	2.0	160.35	46
Dowa	447.1	59.25	13.3	0	0	11.5	2.6	70.75	16
Ntchisi	167.6	34.0	20.3	18.5	11.0	3.0	1.8	55.5	33
Total (Centre)	4314.2	111.75	26.0	407.6	11.3	309.88	37.6	1749.23	42
Region South									
Zomba	612.4	60.0	9.8	285.5	46.6	14.27	2.3	365.77	60
Mangochi	688.7	123.25	17.9	18.0	2.6	20.21	2.9	161.46	23
Machinga	714.6	120.0	16.8	371.5	52.0	17.75	2.5	509.25	71
Chirazulu	292.5	31.75	10.9	55.5	19.0	15.7	5.4	102.95	35
Blantyre	817.6	51.25	6.3	0	0	550.0	67.3	601.25	74
Mwanza	168.5	35.00	20.8	0	0	8.0	4.7	43.0	26
Chikwawa	439.2	131.25	29.9	60.0	13.7	7.8	1.8	199.05	45
Thyolo	597.9	28.5	4.8	7.8	1.3	19.5	3.3	48.0	8
Mulanje	884.9	49.75	5.6	694.5	78.5	19.5	2.2	763.5	86
Nsanje	283.4	119.0	42.0	0	0	16.0	5.6	135.0	48
Total (South)	5 499.7	749.75	16.48	14928	21.37	688.73	9.8	2929.23	52
Total National	11 078.4	2182.5	22.38	2223.9	21.92	1118.71	18.59	5443.06	52

Note: Compilation of a similar table for sanitation is not possible.

2.3 Lessons Learned

The lessons learned from over 60 years of rural water supply and sanitation point very clearly to the need to keep things simple. By the early 1980's Malawi had arrived at a low cost means of achieving coverage and had standardised on a borehole and handpump design. Many of these installations still function today. This initiative seems to have been frustrated by the need to accelerate coverage without clear technical direction and the promise of an improved, cheap locally manufactured VLOM handpump design. However, the coverage achieved over the past 20 years has proved technically and financially unsustainable without large donor assistance. Government is now attempting to promote a policy of decentralisation and community based management for all future rural water supply schemes. This policy remains undocumented but is intended to promote technical and financial sustainability to progressively release central government from its current liability for the recurrent costs of maintenance of rural water supply.

More specifically, the lessons learned in terms of software include:

- The need for clear understanding of the resource base and appropriate modes of development as well as systematic updating of hydrogeological information.
- The need for reliable information on the status of water supply and sanitation in rural and peri-urban areas. The lack of this information has been a serious constraint on sector planning, management and rehabilitation.
- Closer co-ordination needed both between the central/regional/district levels and across sector ministries.
- The sequence of implementation has to be carefully planned and phased from mobilisation for HESP to construction to ensure integration of improved sanitation and hygiene with water supply.
- Effective community based management through village committees need participation of women and back-up support from district authorities.

The lessons learned in terms of hardware include:

- Technologies employed must be well tested and proven.
- Standardisation and easily available spares are essential for sustainability.
- The need to match drilling techniques to hydrogeological conditions and plan co-ordinated drilling campaigns.
- Gravity schemes to be installed in areas with proven sustainable baseflows
- Spare parts distribution must be planned prior to handpump installations and communities should build up a fund based on their ability to pay for operation and maintenance.
- Locally manufactured spare parts contribute to sustainability.

Above all, it is the software that is difficult to implement. It is invisible and therefore not easy to target, monitor and report as an output within the lifetime of a project's implementation. Development programmes find it easier dealing with immediately tangible problems and results such as drilling boreholes and installing handpumps so that most efforts become focused on the hardware. This has involved a massive compromise of vital public awareness, education and training in rural water supply management. While CBM/VLOM

and HESP are currently being implemented to a limited extent, it is probably too early to tell if the combination will result in long-term sustainability.

2.4 The Water Resource Base

The form of the Malawi rift and its associated, basins, platforms, inter-basinal ridges, escarpments and plateaux are characteristic of other rifts in the East African Rift System. Such a setting confers specific hydrological and hydrogeological opportunities and constraints, particularly for rural water supply development which is necessarily dispersed and low-cost.

The present day pattern of rainfall over Malawi's catchments and lakes give rise to particular runoff and recharge patterns that are linked to lake and orographic effects within the seasonal progression of the Inter-Tropical Convergence Zone and associated SE Trade winds and Northeast monsoons. The plateaux of the central and southern regions have mean annual rainfalls of between 400 -1000 mm with areas of high relief in the north and south of the country and the exposed slopes facing prevailing winds enjoying mean annual totals of up to 1800mm. However, rain shadow effects in the Lower Shire valley may reduce mean annual totals to below 400mm limiting local lateral inflow and recharge to the superficial deposits on the rift/Shire valley floodplain. Given that potential evaporation (Penman) ranges from 1100 - 1700 mm and varies inversely with altitude, it can be realised that the most densely populated areas around the southern shores of Lake Malawi and in the Shire Valley coincide with the lowest rainfalls and highest potential evaporation. Therefore any strategy for acceleration of rural water supply is unlikely to depend upon surface water systems which are subject to a dry season recession of up to 6 or even 8 months. This leaves development of shallow groundwater circulation as the only feasible means of expanding coverage. However, the way in which such drilling programmes are designed and executed, whilst building on past experience, has to carefully planned and may require a major re-evaluation of geological and hydrogeological knowledge.

The up-to-date compilation of water resource data for Malawi has been largely hindered through lack of institutional stability and capacity and the need to respond to drought and refugee emergencies and other donor development programmes. This has tended to diffuse the resource monitoring and data analysis efforts of eminently capable staff. Resource assessments have been made on an ad-hoc basis, driven by the particular needs of development projects. As a result the national framework of water resource units/areas developed in the early 1980's remain poorly documented.

In addition, the identification of hydrogeological provinces, which necessarily relate to lithological and structural characteristics, and therefore transcend the catchment unit boundaries, has only been partially developed. This omission has serious implications for rural groundwater development, since the cost-effective planning and execution of extensive borehole drilling programmes requires a detailed knowledge of groundwater systems. It is even more serious in a complicated extensional setting such as the East African Rift System when structural and sedimentological controls on groundwater occurrences and groundwater quality are complex. The entrapment of saline waters in the lower Shire Valley alluvial sequences and the mixing of mineralised juvenile waters with recharged groundwater on rift

margins already pose significant constraints on groundwater development in these areas. Equally, the high transmissivities, storage and recharge potential of rift colluvium present opportunities for the use of production boreholes to supply piped gravity schemes. However, the development of piped gravity schemes in the southern Malawi rift has relied upon the exploitation of high level watercourses and springs which cannot furnish perennial supplies due to the low rainfall and limited storage in the relatively thin overburden of the southern and central region plateaux. The more humid plateaux of the northern region present better opportunities for the development of piped gravity systems from upland sources which tend to have thicker weathered mantles, longer rainy seasons and higher rainfall amounts.

The development of shallow wells may be considered as means of shallow groundwater development if areas with perennial shallow water tables (in the vicinity of large dambo systems for instance) can also be protected sufficiently from domestic, arable and livestock pollution sources. However, reliance upon shallow groundwater circulation in more sensitive peri-urban communities with high densities of pit latrines is bound to pose enhanced public health risks and should only be considered as measure of last resort. Hand dug wells, and boreholes also present opportunities for the development of kitchen gardens through the usage of apron drainage. Dambos also present opportunities for larger scale vegetable and grain cultivation if water can be lifted for supplementary irrigation, but low-cost lifting and distribution of water for supplementary irrigation is can be difficult to achieve on the soft margin dambos. The use of low head drip irrigation systems could also be contemplated in drier areas.

Therefore if further investment is to be made in groundwater development to accelerate coverage of rural water supply, it would seem essential to support the planning and execution of the work with a clear understanding of the hydrogeological systems that are expected to furnish the resource. The judicious matching of drilling methods and borehole construction with known lithological and aquifer configurations is one way in which both performance and coverage of borehole drilling programmes can be significantly improved. So to is the need to standardise handpump types for specific ranges of pumping head to achieve economies of scale, avoid multiplicity of training requirements and overall reliance on foreign exchange to import spare parts. This fact was clearly demonstrated in the Livulezi project which achieved successful implementation of a "low-cost borehole" strategy.

Such an understanding is also essential for the overall planning and management of Malawi's water resources since it would also be expected to drive national and regional policy and legislation, particularly in terms of aquifer protection. This understanding would also contribute to an understanding of the dry season recession inputs to the rift lakes and the subsequent outflow characteristics of the lakes to the Shire.

2.5 Government Water Resources Management Policies and Strategies

Policies and strategies

An outline policy and strategy on water and related environmental matters has been declared in Malawi's National Development Policy (the 1987 Statement of Development Policies document). Targets were set for the period 1987-1996 on the basis of then recently completed National Water Resources Master Plan. The overall thrust of the policy was in line with the objectives of the International Water Supply and Sanitation Decade (1980-91). The policy declares that the first priority will be the rural population and their overall development through improved health and food security. Financial and technical self-sufficiency for both rural and urban schemes is seen as desirable within a nationally led technical and environmental planning framework.

However, in 1994, a Government 'Water Resources Management Policy and Strategies' document was issued to signal the initiation of the World Bank supported National Water Development Project (NWDP). The 7 point policy framework in presented in Box 5. Supporting legislation for the creation of regional water boards remains a pre-condition for activation of the programme's loan. Parliament is expected to pass the necessary legislation in 1995. Under these circumstances, the policy direction now emphasises the provision of water and sanitation services with a "...market based approach to water allocation, which results in those users of water to whom the water is of greatest value gaining access to an allocation..."

Box 5

POLICY FOR WATER RESOURCES MANAGEMENT

"The following statements constitute the broad policy framework for the sustainable management of water resources:

1. *Water should be managed and used efficiently and effectively so as to promote its conservation and future availability in sufficient quantity and acceptable quality.*

2. *All programmes related to water should be implemented in a manner that mitigates environmental degradation and at the same time promotes the enjoyment of the asset by all.*

3. *The approach to allocation of water should be designed in a way that recognises water not only as a social but also as an economic goood and in a manner that achieves maximum benefit to the country.*

4. *In planning and providing water supply services consideration should be given to sage disposal of the resultant waste water.*

5. *Investment of public funds in water and water related programmes should be guided by the epected net economic, social, and environmental bebefits of the programme to the country as a whole.*

6. *The government shall facilitate the participation of stakeholders (including users ans special target groups both in the public and private seccors to ensure that the needs of relevant interests are taken into account in the development of the water systems.*

7. *The pricing of water should reflect demand and the costs of water services. Pricing policy should aim at the reduction of government financial support to the sector over time."*

It could be said that an approach may not correspond with policy initiatives in poverty alleviation and environmental conservation. For instance, the notion that improved coverage (in a predominantly rural population) could be used as a development tool by encouraging improved health and economic activity would seem to be precluded. It may be that here is a general confusion over the rationale for improved water and sanitation coverage. Is such an improvement seen as a promoter of overall welfare provision, and hence economic development, or is it seen purely an economic opportunity in which the net present value of any investment is maximised over the period of a loan? In either case, the detailed mechanism by which such improved coverage to a largely rural population is obtained has not been articulated. If Government is correct in its assertion that current water policy endorses, implicitly, the role of Community Based Management (CBM) and Village Level Operation and Maintenance (VLOM) as part of its overall macro-economic policy of decentralisation, then the detailed implementation of such a policy needs to be spelled out and tested.

The NWDP Project Document also considers that supplying per-urban communities should not compromise the financial viability of the local municipal water boards and that the more peripheral squatter communities may be treated as 'rural' and provided with handpumps. This approach would beg several questions. First it may well be in the interests of the municipalities to actively market their services and pursue new consumers in these communities to both extend their revenue base (when more private connections are asked for in the future). The overall benefit would be improved public health. Second, the present and proposed reliance on pit latrines in high density urban and peri-urban areas will eventually have to be re-examined on the grounds of public health and environmental degradation. Low cost communal septic tank systems could be considered as a viable alternative to high density pit latrines in areas of high environmental sensitivity.

Enabling legislation

There exists a range of water related legislation introduced since the early 20th century. The principle legislative instrument is the 1969 Water Resources Act. However this Act remains unsupported by up-to-date regulatory measures, a fact recognised and addressed by the UNDP supported National Water Resources Master Plan in 1986 (Annexe 7: Water Resources Law and Administration). As far as rural water supply is concerned, the only regulatory provisions are the rules and by-laws established under the District Council Act of 1954.

Three recent initiatives should be noted. First, the Ministry of Works submitted Cabinet Paper No. C/P/7/90 entitled "Proposal to Review the Water Resources Act (Cap 72:03)" submitted in September 1990. It should be observed that this Paper intended to review and amend the Act, not provide up-to-date regulations. Second, the Ministry of Works proposed an order under section 22 of the Water Resources Act to control land and water use in the upper Lilongwe catchment. Third, In addition to the Blantyre and Lilongwe Water Boards Acts of 1971 and 1987 respectively, the new Ministry of Irrigation and Water is proposing and amended Act and legislation to create three new Regional Water Boards - a pre-condition for an IDA loan. This proposed "Water Resources and Water Services Act" provides a clearer definition of mandates and functions with an independent Water Resources

Board, a Water Department dedicated to technical direction and three new regional water boards to furnish urban and rural water services.

The implication of the existing and proposed legislation for the provision of rural water and sanitation coverage needs to be thought through carefully. In particular, the mode of development through CBM/VLOM and the involvement of local government planning procedures and regional water board mandates have to be reconciled if the water resource base is to be developed in a sustainable fashion. The protection of catchment and aquifer systems that furnish rural schemes with raw water supplies is clearly desirable. However, expanding rural populations and peri-urban communities (with growth rates in the region of 12-15%) will not only increase demand, particularly for more groundwater exploitation, but will also impose significant environmental pressure on local catchments and aquifers through deforestation, erosion and pollution. To maintain the hydro-environmental integrity of the existing surface and groundwater circulation, and thereby sustain the resource base, will require more comprehensive provisions for catchment and aquifer protection.

Institutional arrangements

Rural water supply and sanitation is characterised by a fragmented institutional arrangement. The institutional constraints/deficiencies are well recognised and identified. These relate principally to the lack of separation from the regulator and provider of services. The Water Resources Board is for instance chaired by the Department of Water which is the operational agency for government provided water services. The overall lack of co-ordination between line ministries in water and sanitation implementation is also well recognised. Under the proposed 'Water Resources and Water Services Act', this deficiency would be partially remedied by making the Board independent of water supply operations and providing it with its own secretariat. However, the need for a co-ordination mechanism for rural water supply and sanitation implementation is still not addressed.

The Water Department (formerly with the Ministry of Works) has recently been combined with the Irrigation Department from the Ministry of Agriculture to form the Ministry of Irrigation and Water Development. This can hardly be viewed as progressive step since it further confounds the ideal need to separate the users from the regulators. The implications for both urban and rural water supply are further compromised since irrigation may eventually conflict with potable use.

The creation of three regional water boards, if approved, would clarify matters as far as water and sanitation is concerned. However, the relationship with the Ministries of Health (health education), Local Government (sanitation) and Community Services (community participation remains confused and duplication of tasks and competition for resources from central government, district councils and donors is inevitable.

Sanitation and health offer a confused picture. City councils are responsible for the waterborne sewerage systems and septic tank emptying. In rural areas the district councils are responsible for low cost sanitation (pit latrines and sanplat distribution) while the Ministry of Health is responsible for health and hygiene education. The Ministry of Community Development is also involved in mobilisation and sensibilisation of village communities.

Equally, the role of the Ministry of Forestry and Natural Resources and the Ministry of Agriculture in catchment protection and irrigation development could be expected to overlap with other interests in aquifer protection and natural resource conservation.

Therefore implementing integrated water/sanitation/health/environment programmes at community level without involving overlap and duplication between the respective line ministries remains problematic. Although it has to be admitted that at the local level, despite this institutional fragmentation, some degree of harmonisation of roles and functions is achieved, largely through the efforts of district development committees.

3. Financial and Institutional Issues

3.1 Financing Rural Water Supply and Sanitation

One of the fundamental problems faced in Malawi for accelerating coverage is that of lack of adequate financing for rural water supply and sanitation. This coupled with the fact that the previous investments, much of them through donor support, have now fallen into disrepair suggests that any financing strategy must be based on the criteria of sustainability. At the same time, the funding limitations and the inability of the poor to pay for the capital and often the recurrent costs of services means that the financing strategy must be sensitive to the plight of the poor.

Government expenditures

Government expenditure in the social sector, including water and sanitation, is estimated to be MK 1,328 million (Economic Report, 1995, EP&D, p.94,96). This represents 26% of total central government expenditure and 12% of GDP in 1994/95 and includes both recurrent and development budgets. While Government role in the GDP is large, the revenue base is extremely small due to widespread poverty. This means that the capacity of the government to undertake programmes without significant external support is limited. In 1994/95 donors provided 52% of government expenditure either in grants or loans. A Structural Adjustment Programme has also been in place since 1988 under which Malawi has borrowed. The total external debt of the country currently stands at $1.8 billion.

Total central government expenditure on water and sanitation in 1994/95 was MK 30 million. Almost all of this came from the development budget. However the sum represents less than 1% of the central Government annual expenditure and only 4% of Malawi's total development expenditure (including donor assistance). Indeed, virtually all the development expenditure on water and sanitation came from external sources. The significant domestic resource constraints means that external assistance is essential if basic water supply and sanitation services are to be extended to the estimated 5 million unserved in the rural areas. In the 1995/96 Public Sector Investment Programme (PSIP) a total of MK61 million has been allocated to water and sanitation representing 7% of the total investment. Of this the largest share has gone to rural water supply at 68% of the total water and sanitation budget with MK15 million on on-going programmes, including rehabilitation and MK28 million on new projects in the rural areas. On this evidence, the government has shown a willingness to reallocate resources amongst and within sectors to improved coverage of the rural population.

Proposed National Water Development Project and the Malawi Social Action Fund (MASAF)

The Government of Malawi is initiating the National Water Development Project (NWDP) and the Malawi Social Action Fund (MASAF) with World Bank support. The mechanics of both programmes is still being designed but it is expected that they will both be meshed together for the implementation of rural water supply.

The immediate objectives of the NWDP as detailed in the Project Document of November 1994 are to achieve by the year 2010: (1) 100% coverage in public water supply to

the urban areas of Lilongwe and Blantyre and 95% in other towns; (2) 74% coverage to the population in rural areas and (3) 24% coverage through waterborne sewerage and septic tanks in urban areas (4) implementation of the Government's water resource management and environmental protection plan when ready; (5) implementation of comprehensive institutional reforms.

For the rural areas the NWDP Project Document prepared in 1993 by consultants specifically identified five key activities which would be pursued between 1994-2010:

- Rehabilitation of 10 Gravity Piped Community Managed Schemes;
- Construction of 12 new Gravity Piped Community Managed Schemes;
- Rehabilitation of 5,500 handpump equipped boreholes and shallow wells (groundwater schemes);
- Construction of 16,400 new boreholes with handpumps (14,900 in rural areas and 1,500 in urban fringe areas);
- Promotion of community participation, village level operation and maintenance (VLOM) and personal hygiene through health campaigns.

The present World Bank proposal is to provide $100 million under the NWDP over the period 1996-2003 ($79million IDA; $5.3 million NORAD; and $9.6 million GOM). It was expected that of this amount $20-30 million would be provided for rural water supply but the revised figures contained in the Draft World Bank Staff Appraisal Report suggests that this would be significantly lower at $14.7 million. The total costs for meeting the objectives for the rural sector as estimated in the NWDP Project Document and the extent of proposed NWDP funding at present is noted in the table below.

With the total allocation of $14.7 million for rural water supply in the NWDP and NORAD and GOM providing $14.9 million of the financing for the total project of $94 million, it would appear that the World Bank financing of the rural sector is minimal.

Table 2: Funding Requirements for Rural Water Supply and Proposed Funding under NWDP

	Total Requirement 1994-2010				Proposed Funding 1996-2003	
	Total	Foreign Exch.(1)	Domestic (2)	Total		Foreign Exch.(%)
	MKm.	US$m.	US$m.	US$m.	US$m.	
Rehabilitation of existing systems						
Rural gravity - piped water schemes	82.6	14.0	1.4	15.4	1.8	75
Borehole	48.0	7.2	1.0	8.2	3.6	66
Protection of catchment areas	36.0	5.1	1.0	6.1	1.6	37
Sub-total	**166.6**	**26.3**	**3.4**	**29.7**	**7.0**	**62**
New Schemes						
Rural gravity-piped water schemes	57.0	9.7	1.0	10.7	3.1	75
Borehole	393.6	67.0	6.6	73.6	4.6	75
Sub-total	**450.6**	**76.7**	**7.6**	**84.3**	**7.7**	**75**
Total Rural Project Costs	**617.2**	**103.0**	**11.0**	**114.0**	**14.7**	**69**

Notes: (1) Foreign exchange component of costs is as noted in the NWDP proposal (see last column). It is converted at pre-liberalisation exchange rate of $1=MK4.4. (2) Domestic component converted at post-liberalisation exchange rate of $1=15MK.

The total estimated cost for rural water supply was MK617.2m at the pre-liberalisation exchange rate of 1US $ = 4.4 MK. Converting these costs at the new exchange rate of 1US$ = 15MK but taking account of the fact that the foreign exchange costs would remain unchanged post-liberalisation means that US$114 million (excluding consultancies) will be required to reach 74% coverage in rural areas by the year 2010. In the NWDP Project Document 36 per cent of the total investment was slated for rural water supply to achieve 74% coverage by 2010. In the present NWDP proposal only 14.7 per cent is now targeted for rural water supply.

In the initial two years the rural programme of NWDP expects to rehabilitate 2 gravity-fed rural schemes and 2200 boreholes; provide 300 new boreholes; and provide soil conservation measures for five unprotected catchments. In the next three years, the proposal is to rehabilitate 3,300 boreholes and 3 gravity-fed rural piped water schemes, and provide 450 new boreholes and 4 gravity-fed rural piped water schemes.

On the basis of the estimated capital cost at $1500 for borehole rehabilitation (equivalent to MK22,500 or MK8,700 at pre-liberalisation exchange rates with a 66 per cent foreign content) and $4,500 for a new borehole (equivalent to MK67,500 or MK24,000 at pre-liberalisation exchange rate with a 75 per cent foreign content), it is estimated that the NWDP will allow for only 2,400 boreholes rehabilitation and 1,000 new boreholes during a five year period to be financed between 1996-2003. It is, therefore, unclear as to how the NWDP project expects to rehabilitate 5,500 boreholes with an allocation of $3.6 million

when this was previously estimated at MK48 million at pre-liberalisation exchange rates. Indeed, if the NWDP retains the physical target in this regard, then an additional $4.6 million is needed for borehole rehabilitation.

Under the present NWDP proposal it is expected that 1.5 million people will be covered. However, if only 2,400 boreholes can be rehabilitated and 1,000 new ones constructed then the coverage through boreholes which is the bulk of the figure would amount to about 850,000 persons (250 per water point). This would mean that about 17% of the roughly 5 million not served or under-served rural people would gain access through boreholes in the NWDP.

Since service delivery will depend to a large extent on capacity building at various levels, part of the funding or additional funding will need to be earmarked for building such capacities. Without concomitant capacity building, the ability of the government to deliver services which will be sustainable and not compromised will be in question. While the NWDP provides for institutional strengthening at the central level, considerable capacity building at other levels such as that of hydrogeologist, drillers, district officials and communities will also be needed.

The principles for cost-recovery from the communities of the initial capital and O&M costs as adopted in the NWDP proposal is encouraging viz. that cost-sharing will be applied whereby the GOM financial support will be restricted to a level equal to the per capita capital costs of a basic service level and all other costs in excess of this basic level, including those for higher levels of services, will be borne by the users. Moreover, all O&M costs will be borne by the users themselves. These principles should be adopted by GOM as part of its policy for financing rural water supply.

These principles also reflect those of community based management for rural water supply which are discussed in greater detail below. This approach is sensitive to the poverty situation in Malawi where in the urban and fringe urban areas households with monthly expenditures of less than MK120 spend less than 1% or MK1.2 per month on water. Such households constitute close to 40% of all households. 16% of the households that have monthly incomes of less than MK85 would not be able to pay even this much. In rural areas the situation is worse. Even if people are willing to pay 1.25% of their budget for water, then the poorest third can only afford to pay 25-30 tambala per household per month; the next third 55-100 tambala or MK6.6. per year which is equivalent to 15 tambala/m3 for an average household consuming 27 l/c/d. Such poverty calls for the promotion of community ownership through mechanisms other than financial, such as provision of labour inputs.

The NWDP proposal expects the bulk of the funding for boreholes to be provided under the Malawi Social Action Fund (MASAF). Moreover, it is expected that the implementation arrangements of the two projects in rural areas would be carefully integrated. It is, therefore, necessary to examine the extent of funding that is proposed under MASAF and the mechanisms by which synergies between the two can be harnessed in the implementation phase.

Under its Poverty Alleviation Programme (PAP) the GOM has prepared the Malawi Social Action Fund (MASAF) for World Bank financing. The underlying principle of

MASAF is that it should be participatory and community driven. The exact mechanisms for the implementation of MASAF is in the process of being established and will depend on a process of learning by experience. Precise details of project implementation through MASAF is still unknown. The Zonal Officers or District Development Committees are likely to be focal points of project submission. Communities could be assisted in preparation of projects through various persons such as extension workers, facilitators, teachers, health workers, and church leaders who would be entitled to a remuneration of 5 per cent (maximum) of the project cost. Communities are not precisely defined but could presumable comprise any group of households who come together for the project with a possible minimum of three.

There will be no earmarking of funds for rural water supply and sanitation, but it is expected that since rural water supply is one of the most felt needs, this would be reflected in the project proposals. The targeting of MASAF is a difficult issue. At present neither geographic targeting, self-targeting, or project targeting is being considered. Through a process of learning and monitoring, it is expected that modifications would be made in the implementation phase. There would, however, be an upper limit on the size of the project and the total number of projects per district would be restricted to around twenty at any one time.

The MASAF funds are to be channelled directly to the communities' bank or post-office accounts through the DDC and the Zonal Officer. The Zonal Officers would also be responsible for monitoring the implementation of the project. Twenty-five percent of the funds are expected to be contributed by the communities either in cash or imputed labour and materials. If this principle is applied to the rural water supply projects also, then it would be contrary to those being agreed under the NWDP where cost-sharing for the basic levels of service is to be based on the ability of the communities to pay and all evidence suggests that the poor in the rural areas will not be able to meet 25% of the costs for say a borehole with handpump - the foreign exchange component of which alone amounts to 75% of the total cost.

Even if 25% of the currently anticipated initial funding of MASAF of $40 million goes to rural water supply, the total amount of resources that would be available would amount to only about $24.7 million. The rural sector comprises 85% of the population of which about 60% are unserved or under-served. Enhancing the component of the financing for the rural sector will provide an important opportunity for poverty alleviation. It is imperative that a greater amount of resources be allocated to rural water supply and that the bulk of the financing for these areas is not left to be funded through MASAF.

The anticipated meshing of the rural component of NWDP and MASAF would appear to reflect the view that the former would ride on the coat-tails of MASAF since it would depend on communities expressing a demand for water supply services and approaching either MASAF or NWDP for funds. While the community driven approach is to be welcomed, there exist gaps in the institutional arrangements between the financing of rural water supply under both NWDP and MASAF and the actual delivery of services.

At present, the Water Department is the only institution through which rural water supply services are being delivered in an integrated manner. Recognising this, the NWDP expects that rural water supply services will continue to be provided by the Department

There are 65 drilling rigs in the country of which the government has 14 (7 rotary) and the private sector 51 (14 rotary). Procurement of handpumps is done primarily through the Department or donors, although installation can be done either by the Department staff or the private sector. There needs to be very close co-ordination between the financing mechanisms and the delivery of services.

In the case of water supply, it is envisaged that tenders will be invited from private contractors for a certain number of boreholes. It is proposed that in the case of rural water supply a tripartite contract will be entered into between the Water Department, contractor and the Social Action Fund. In the case of the NWDP, the contract will be only between the first two parties. The Water Department will oversee the implementation of the project and payment will be authorised only when it is finished satisfactorily. The pre-condition that would be attached to the communities is that they must form a Water Committee and set up a maintenance fund which has sufficient funds for all maintenance over the next year.

A number of issues arise:

- The poor may find it difficult to access to the financing under MASAF because of their lack of capacity to design projects for funding. In the absence of a liaison mechanism between the communities and the deliverer of services which is either the private sector or the Water Department, projects for MASAF funding will find it hard to get off the ground. To overcome this bottleneck it will be necessary to build capacities at all levels, particularly at the community level through community liaison officers/extension workers for the identification of demand, expressed by the community, and co-ordinating demand with the delivery of services;

- Service delivery will have to be closely co-ordinated to reap the benefits from economies of scale. For example, it would be wasteful if demand under MASAF and NWDP is met in a haphazard manner resulting in inefficient movement of drilling rigs. It will be necessary to identify water requirements in a catchment area and drill a number of boreholes there to take advantage of economies of scale. This means that in the implementation phase, there has to be close co-ordination between the Water Department and financing under MASAF. The capacity of the Water Department to be able to provide such a co-ordinated response will need to be built concurrently with implementation capacity.

- Choice of technology is unlikely to be a community option since this is almost always pre-determined by the topography, hydrogeology and standardisation policies, but community decision-making on the siting of boreholes and community contributions in cash or kind is a pre-condition for sustainability and community based management of the facilities. In this respect, it is imperative that if the private sector is expected to provide service delivery under MASAF, then the borehole must be properly sited and there must be careful supervision and accountability. Without such safeguards, there is a real danger that proper surveys will not be carried out and the communities may end up paying the funds they obtain from MASAF to unscrupulous private contractors with the boreholes becoming dry or non-functioning in a short period of time. Supervision and accountability and quality control will be essential.

- Although, it is well recognised that any form of targeting is difficult, to ensure that both the MASAF and NWDP funds reach the poor and are geographically distributed, the government should consider 'geographic targeting' - determining quotas for districts and depending upon data availability, areas within districts. If it is found that certain districts are unable to design projects or the projects are being concentrated in certain areas, then a mechanism to analyse the reasons and focus information campaigns in those regions can be pursued.

- Funding for rural sanitation is not being considered under either the NWDP or expected to be so under MASAF. Sanitation and hygiene messages can be carried along with the community based management approach but this requires a close integration of sanitation service provision with water supply in rural areas. This would mean linking CBM/HESP with water supply as discussed in greater detail below.

- Guidelines for the implementation of NWDP and MASAF under the CBM approach will need to be carefully developed and the implementation of both programmes monitored and evaluated with timely correctives actions, as necessary.

Donor support

Donor support for rural water supply and sanitation has always been critical for the extension of services. The major donors in the 1990's are indicated in Table 3 below.

Table 3: Donor Support for Rural Water Supply and Sanitation

Donor	Nature of support	Period	Remarks
IDA	Rehabilitation of 1450 boreholes in the Northern and Central Region with VLOM	1992 - 95	Project ongoing, value $US4.3 million
UNCDF/UNDP	Rehabilitation of 1000 in the Southern Region with VLOM and HESP	1994 -95	Project in progress. A total of US$ 6.03 million provided
UNICEF	300 water points in Nsanje. Rehabilitation 100 boreholes, 100 deep boreholes and 100 shallow boreholes	1992 - 95	Project extended to 1997 for HESP. A total of US$ 1.4 million provided
USAID	13 rural gravity schemes and rehabilitation of 2 existing ones in various parts of the country	1992 to present	2 completed 5 on-going 8 about to start
ADB	Zomba South Rural gravity scheme	193 to present	Project ongoing value $US 4.65 million
JICA	300 boreholes in Mchinji 164 Boreholes in North Kawinga, Machinga	1993 - 95 1988 - 90	Project be completed in Sept. 1995, value US$ 6 million Project completed in 1990 and total of $ 20 million provided
KfW	231 new VLOM boreholes and 19 rehabilitation.	1995 - 96	Project in progress
DANIDA	303 VLOM water points in Karonga	1988 - 94	Project completed
SCF-UK	Construction of water points in refugee impacted areas and drought stricken districts	1989 to present	Also implementing CBM on national projects
CONCERN Universal	Construction of water points in refugee impacted areas and drought stricken districts	1990 to present	Also implementing CBM on national projects

Given the scale of the problem, it hardly bears noting that such support will remain important in alleviating one of the worst manifestations of poverty until the country is able to finance these on its own. For effective implementation of projects donor support must be predictable and should not fluctuate. This should also be co-ordinated so that what support is available over the coming decades has the greatest impact. The mechanism for this co-ordination should be the national rural water supply and sanitation programme with the CBMU in the Water Department playing the pivotal role. The nature of this support must for sustainability also be consistent with the governments' policies in the sector such as in the case of standardisation.

3.2 Institutional Arrangements for Service Delivery

Until the reorganisation of government departments in 1994, the responsibility for the delivery of water supply services was with the Ministry of Works. Since the restructuring this responsibility now rests with the Ministry of Irrigation and Water Development (Water Department) and the Lilongwe and Blantyre Water Boards and three Regional Water Boards. For the rural sector, however, the responsibility for service delivery is with the Water Department which is expected to continue for the foreseeable future. Sanitation has been the responsibility of the Ministry of Health and is handled primarily by the Hygiene Education and Sanitation Programme of that Ministry and to some extent the Community Based Management Unit.

The present and proposed institutional structure for financing the delivery of rural water supply and sanitation services is illustrated in Figure 2. The figure also shows that service delivery in Malawi is very much a top-down approach since only the government has the capacity and funding, however limited, to deliver services to the rural areas. The strategies for sustainability, however, need to be bottom-up with the communities being the decision-makers. At the same time, it is recognised that the communities cannot meet the capital cost of the investments needed and, therefore, any sense of ownership and control over the resources can only come about through their involvement in every stage of process of service delivery. This can only be done through the Community Based Management approach which is discussed in greater detail below.

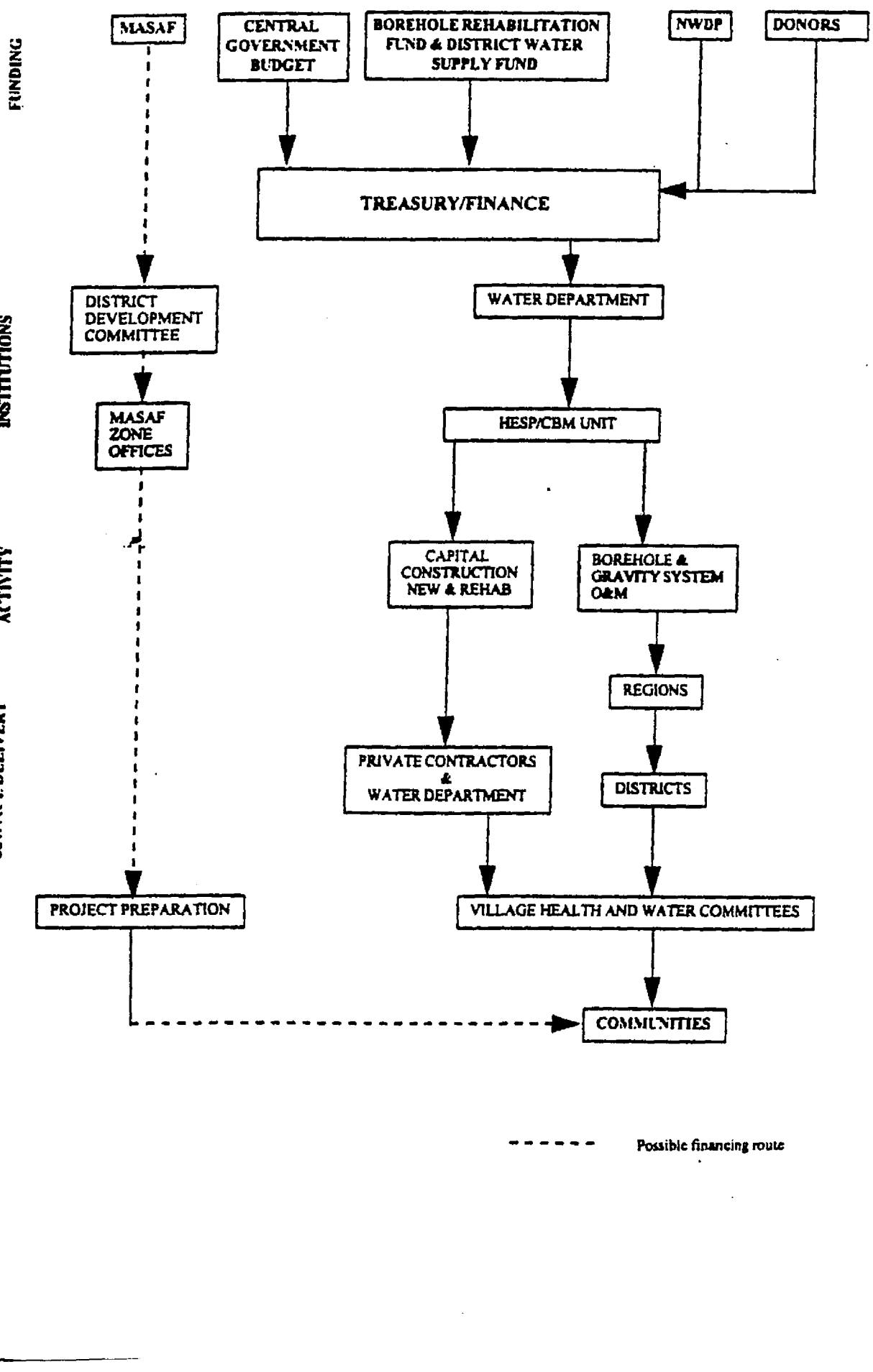
The structure of service delivery shows a number of gaps which will need to be addressed if there has to be an acceleration of services with sustainability. Some of the areas which need to be considered are:

- Capacity building at the community, district and central level where community liaison officers or extension workers need to provide the linking mechanism both for MASAF and for the capital projects implemented by the Water Department.

- Co-ordinating the implementation of the water and sanitation service provision of MASAF and NWDP through the Water Department in order to reap economies of scale in operations and integrate water supply delivery with hygiene education and sanitation promotion. For the latter there will in any case need to be closer co-ordination with the HESP unit in the Ministry of Health. Where the private sector will deliver services, a distinct co-ordination, supervision and monitoring mechanism will be necessary.

- Building monitoring and supervision mechanisms which will be able to help in bringing out transparency and accountability and ensure that the quality of service delivery is not compromised.

FIGURE 2 **RURAL WATER SUPPLY AND SANITATION SERVICE DELIVERY MECHANISMS**



4. Strategies for Sustainability and Acceleration

4.1 Community Based Management for Sustainability

The past experiences and lessons learned in Malawi clearly points to the urgent need to improve assistance and support to communities in order for them to take on the management and first level of maintenance of their water and sanitation facilities. Too much emphasis in the 1980's was placed on the hardware aspects of the programme, particularly on the so called VLOM handpump which gave government the impression that a perfect handpump would relieve them of all responsibility towards pump maintenance. Sadly, this perception led to the rapid deterioration of many systems as monitoring and maintenance were ignored.

The transition from a government maintenance system to a community system requires government actions on several fronts. It also requires a continued involvement at national level for policy, overall strategy and co-ordination in addition to a second level of back-up major repair and maintenance at district level. In developing community capacities to plan and manage rural water supply, sanitation and hygiene activities, three major courses of action are required:

- identify and promote approaches to community based water supply management and maintenance;
- develop and promote effective environmental sanitation and hygiene strategies which are well integrated with water supply interventions;
- strengthen district level capacities to support communities in their water and environmental sanitation activities.

Two important inter-related activities should find their place in the above: community water resources management and protection and gender-balanced approaches.

A Community Based Management Unit

In order to achieve effective national level co-ordination, the above activities outlined above should be carried out by an expanded Community Based Management Unit (CBMU). This unit would cover both rural (and peri-urban) water supply, sanitation and hygiene education. In supporting and developing community capacities to manage and maintain their own water supply systems, CBMU would play a critical role in co-ordinating the efforts of government ministries, NGOs and donors. The unit should be headed by a National Co-ordinator (M.Sc. in civil engineering with at least 10 years of experience in rural water and sanitation who reports to the Controller of Water Services) and incorporate the current CBM and Centralised Borehole Maintenance structure in addition to expertise in community and hygiene education, communication and social sciences. The latter positions or skills which should currently be found at the national level in HESP but are lacking. An integrated CBM/HESP unit should be located in the Water Department to better ensure effective national level co-ordination for using water supply interventions as an entry point or

community incentive to promote improved sanitation, hygiene and environmental protection practices. Figure 3 presents a provisional organisation chart for the proposed CBMU.

In order to create a viable system where villagers can maintain their own handpumps or other water sources, a certain amount of back-up support is needed at the district level. By combining the permanent staff of the Central Borehole Maintenance with the staff of CBM, sufficient manpower will be available to cover existing and proposed water points.

Improving the management and maintenance of rural water supplies

In order to begin to work towards the achievement of sustainable community management of maintenance of rural water supply systems, the following prerequisite activities are essential:

National assessment of rural water supply points. To accurately assess the magnitude and nature of the "maintenance problem", the CBMU should conduct a field assessment of all known water points. This survey (which will constitute the initiation of the National Monitoring System described in section 4.3 below) should be undertaken district-by-district. It will provide a data base of not only the number and types of water sources and systems used by rural communities (i.e., their locations, yields, reliability, etc.) and indications of access of safe and reliable water supplies, but will also provide detailed information on their functional status, the types of handpumps and other technologies employed, and information about how the communities themselves have managed to maintain or not maintain these systems and their problems faced.

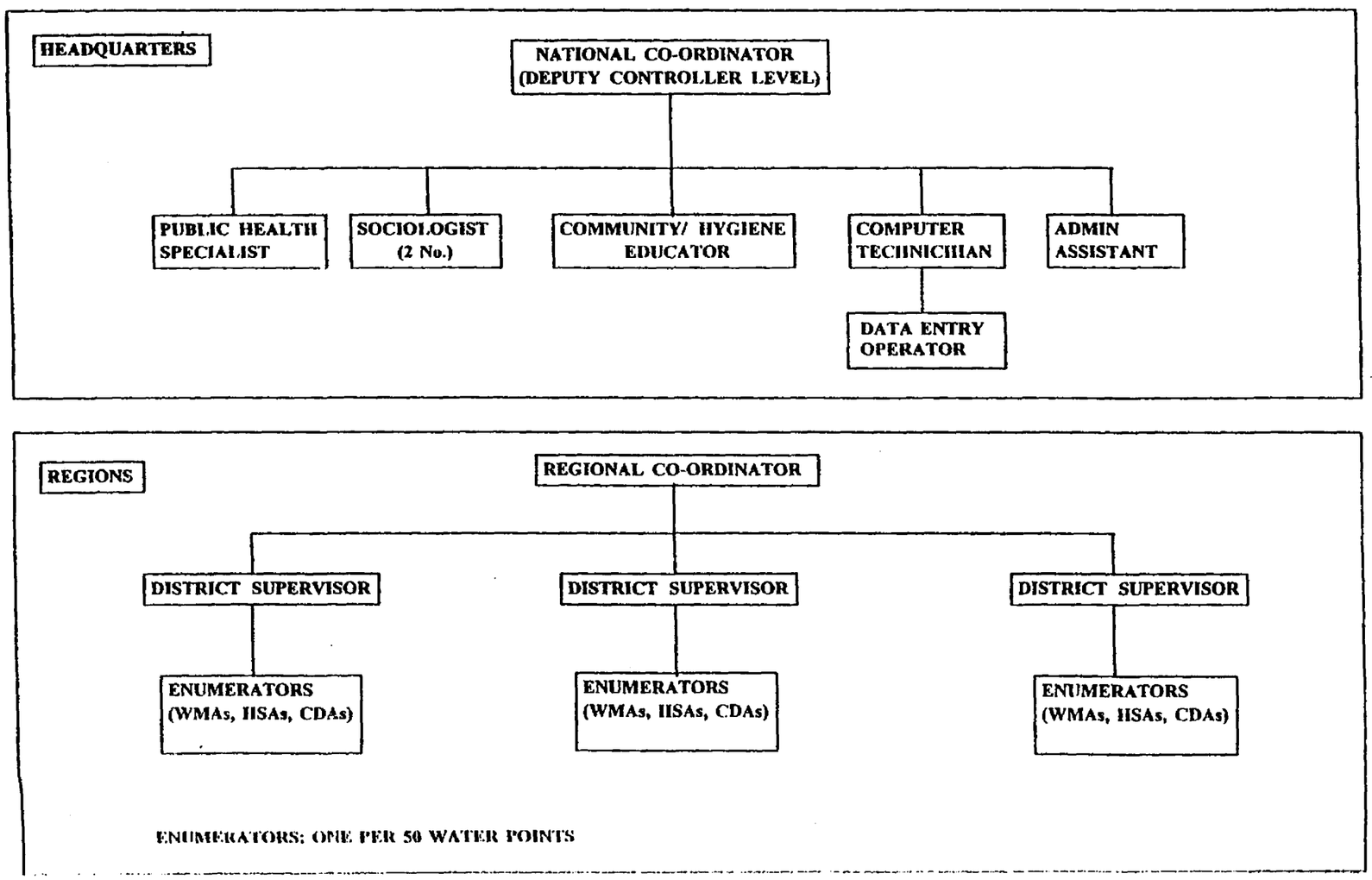
This assessment should be carried out by district level teams comprising water monitoring and technical assistants from the districts in which the assessment is being conducted. In this way, the capacity to maintain and update the data base will be established through this exercise. With this information, district and national data bases will be built up which will help planners to monitor the situation, prioritise and quantify rehabilitation needs. This information will then be used to guide community and district level planning for the rehabilitation, development and maintenance of rural water supplies.

Once the national (all-district) data base set up, attention will be directed to ensuring that these data bases are regularly updated to provide a clear and accurate picture of the number of functioning and non-functioning water points. This information will be essential not only to provide district committees and councils with accurate information with which they can plan, but equally importantly, will provide a foundation for the continued monitoring of service access and of the effectiveness of community based strategies to improve the management and maintenance (and therefore serviceability) of these systems.

Study of community based maintenance systems. To complement the field assessment, CBMU will need to study and compile information on various community based water supply management and maintenance experiences, assess their positive and negative characteristics, identify lessons learned and use the information to prepare guidelines on how to promote and support community involvement in the management and maintenance of community water supply systems. Special attention should be paid to the distribution of spare parts.

FIGURE 3

ORGANISATION CHART FOR COMMUNITY BASED MANAGEMENT UNIT



Handpump policy. The standardisation on the Afridev handpump in Malawi in 1990 should have resulted in greater number of operational and well maintained pump by 1995. However, this is not the case for the following reasons:

- Although the Afridev is considered a VLOM handpump, villages or communities can not maintain it without other levels of support which have not been sufficiently provided.

- Spare parts for the Afridev which represents the most basic level of support are normally not available to or near the communities.

- The replacement of non-Afridev handpumps with Afridevs has not proceeded in a systematic district by district manner. Each district still has a mixture of different handpumps which makes maintenance extremely difficult if not impossible.

- Afridevs still represent less than half the approximately 10,000 deep-well handpumps in the country.

- The Malawi standardisation also allows for use of the Climax handpump for installations below 45 meters which is acceptable. However, Climaxes are also recommended for health clinics for pumping to overhead tanks. It would be better to modify the Afridev for use at clinics to maintain standardisation. The installation of India Mark-II handpumps are also permitted which is illogical.

- 164 Vergnet footpumps were allowed to be installed which contradicts the standardisation policy and undermines the whole principle of standardisation.

Handpump standardisation and the rapid systematic replacement of all non-Afridevs with Afridev handpumps (except for extra deep installations) is an essential prerequisite to establishing community based maintenance.

A direct action Afridev handpump for shallow well conditions (SWL above 15 meters) is currently under local manufacture development and field testing in Malawi. As this pump has the same down-the-hole components as the standard deep well Afridev, its manufacture in Malawi will also provide a local source for most fast wearing spares for the Afridev which can contribute to community maintenance. However, the quality of the plastic components of the Afridev are critical to its successful performance and, therefore, the large scale introduction of the direct action Afridev should only commence after thorough field-testing under heavy use conditions for at least three years. In the meantime, the standard Afridev should be installed in shallow-well areas.

Table 4: Handpump types currently used in Malawi

Type	Standard	Not Standard	Remarks
Afridev Deep Set	☑		Standard for all rural groundwater supplies
Afridev Direct Action	☑		Being developed for shallow wells and boreholes
Climax	☑		Heavy duty for pumping to overhead tanks and for extra deep installations
India Mark II	☑		For deep boreholes
Bush pump		☑	Widely used, being phased out
Maldev		☑	Forerunner to the Afridev
Aquadev		☑	For deep boreholes installed in refugee areas
Malawi Mark V		☑	A shallow well suitable for family use
Shire		☑	For shallow wells
Rhumphi		☑	For shallow wells
Madzi		☑	For shallow wells
President		☑	For deep boreholes being phased out
Vergnet		☑	Foot pump for deep boreholes
Mono Pump		☑	For deep boreholes
Nira		☑	For shallow wells installed mainly in refugee areas
Consallen		☑	For deep boreholes

Costing and financing of the maintenance of community water supplies. Since the costs of handpump and community water tap (kiosk) maintenance will be borne by the communities themselves as well as partial capital costs of some new installations (e.g., EU's agro-forestry micro-projects) the costs of constructing and maintaining community water points will be estimated and a number of community financing systems will be reviewed to determine which might be the most appropriate for different communities in the countries. On the basis of this work, the CBMU will propose and cost systems for developing rural water supply management and maintenance to community level, and define the nature of support and back-up which will be required of district level authorities.

The major outputs expected of this component of the programme include:

- assessment of water points completed and update annually.
- study of community based water supply management and maintenance systems.
- national handpump policy prepared, disseminated and implemented.
- community guide on "How to Manage and Maintain Your Water Supply."
- guidelines on costs of construction, rehabilitation and maintenance of rural water supplies.
- study of community based cost recovery and financing schemes.
- establishment of system to monitor serviceability of community water supplies.

Integrated water, sanitation and hygiene strategies

While the need to integrate water, sanitation and hygiene strategies is broadly recognised if improvements in health and well-being are to be achieved, most community based programmes have experienced difficulty in developing and applying rural water. sanitation and hygiene strategies that work. The reasons for the lag of sanitation and hygiene programmes are numerous:

- often, sanitation and hygiene interventions are not seen to be as important as water by either project managers or communities;
- sanitation/hygiene interventions are more difficult as they rely on a change in behaviour of targeted individuals, families and communities;
- inadequate co-ordination between the "providers" of water, sanitation and hygiene education leads to conflicting messages being directed to communities;
- proposed interventions are not valued or thought to be appropriate by beneficiary communities or are not based on the priorities, cultural practices and needs of communities.

To address these problems, CBMU will seek, through co-ordinated action with concerned ministries, donors and NGOs, to prepare policy guidelines, orientation, training and communication materials in support of an integrated strategy for use by district and community leaders in rural Malawi. Specific activities to be undertaken include:

Study of community based sanitation and hygiene approaches. To fully understand and learn from past experiences, CBMU will co-ordinate a study of various sanitation and hygiene projects or strategies implemented in the country. This study will focus on identifying key health and cultural behaviour which needs to be modified to improve or promote improved sanitary conditions and hygiene. The study will also review the strategies of projects addressing these behaviours, assess their impacts, strengths and weaknesses, and lessons learned. This work will be undertaken in collaboration with Ministries of Health, Local Government and Rural Development NGOs and donors.

KAPs on water use, sanitation and hygiene. In addition, a study will be commissioned to identify which sanitation and hygiene strategy might prove most effective in Malawi. Knowledge, Attitudes and Practices (KAP) studies and focus group interviews will be undertaken to improve understanding as how to pursue these strategies. Such studies will also identify negative behaviours and possibilities for change and should be undertaken in collaboration with the Ministry of Health since they will form one of the bases for development of the HESP strategy to be adopted. The studies should also provide clear guidance on the approaches to harness water supply interventions, and borehole programmes in particular, as entry points for sanitation development. KAP study results should also be aimed at providing indicators for the development of schools hygiene education curriculum

and the production of indicators for the application of other approaches such as "food for work" into programme for acceleration of coverage.

Development of sanitation and hygiene strategies. On the basis of these studies, a draft policy guide, and specific guidelines will be prepared and distributed for use by district and community planners. This policy statement and guidelines will provide a clear analysis of the causes of illness due to poor and inadequate water supplies and poor sanitation and hygiene practices; present a description of the roles and responsibilities of the concerned ministries in supporting water and sanitation activities at the community level; provide practical guidance on how to plan, manage and monitor sanitation and hygiene education programmes and on what individuals, families and communities can do to reduce the risks of ill health due to these diseases. Within this guide priority attention will be focused on the prevention of cholera, dysentery and other diarrhoeal diseases through advising on effective sanitation strategies (e.g., latrines); household cleanliness (rubbish disposal, compound cleanliness, disposal of baby's stool etc.), care of water in the household and cleanliness with food preparation ; personal hygiene and cleanliness (hand washing). The opportunity will also be taken to reinforce other relevant messages related to water and sanitation such as environmental protection, diarrhoea management and oral re-hydration therapy.

The policy will provide guidance not only on situation and hygiene standards in the home and for the community but will also seek to provide practical guidance to schools, health facilities and for local councils to use in improving the sanitation conditions of markets, public meeting places, etc. Special emphasis will be placed on providing guidelines for schools on appropriate, affordable and manageable water and sanitation facilities. Minimum water needs will be quantified and standards established, specification for pit latrines and sanitary facilities will be provided, and a number of activities will be proposed to promote children's responsibility for the cleanliness, hygiene and maintenance of school facilities. Specific guidelines will also be provided to mobilise micro-project funds for the construction, rehabilitation and/or improvement of water supply and sanitary facilities in schools.

The role of HESP. In the 1970s there were Health Education and Sanitation Promotion (HESP) activities in Malawi, but they were not known as such and the approach had not been formalised within the Ministry of Health. The HESP Programme proper began in 1982 in the Ministry of Health with the District Health Inspectors and Environmental Health Officers involved in training. Other external agencies such as UNICEF, Save the Children, and Africare provided support to the work. The emphasis was on hygiene and how the community could protect water from contamination during the journey from the tap to the home, and while it was stored in the house.

HESP is an approach which, based on experience in Malawi and elsewhere, recognises that without the necessary behavioural changes brought about through understanding of the issues by the community, much of the potential health and social benefit to be hoped for from water supply and sanitation intervention will not be realised. HESP is best implemented as a component of the Community Based Management (CBM) approach since they are complimentary and comprise one comprehensive package.

When HESP is introduced with the development of water supply it generates the parallel demand for improved sanitation through the awareness generated in the community. Thus the simultaneous development of water supply and sanitation is encouraged, an approach which has been advocated in the past, but which has seldom been achieved.

If HESP is to be successful its application has to be officially accepted and programmes with the necessary funding have to be established as part of the CMB activities. A start has been made through the establishment of the HESP Co-ordination Unit in the Ministry of Health, supported by USAID. A more committed approach supported as part of the overall rural and peri-urban water supply and sanitation strategy must be adopted.

Development and distribution of water, sanitation and hygiene information, education and communication (IEC) materials. In order to address the knowledge gap regarding use and maintenance of water supplies, orientation, training and community education materials should be developed for all ministries, districts, community groups, NGOs, and donors involved. It is expected that these materials will be adopted throughout the country, and that they will have the effect of changing attitudes about the value of water and the responsibilities for its continued provision. Teaching materials on the technical aspects of maintenance should also be provided as should guidelines on the dissemination of materials and the training of trainers at the regional and district levels.

A wide variety of materials are needed to fill current knowledge and information gaps. Water and sanitation policy statements and planning guides for district development committees and teams will give shape to the programme and ensure consistency of purpose and action. An orientation package ("What the Community Can Do") should be prepared for use by community leaders in training of traditional leaders, councillors and other interested parties in water supply management, sanitation and hygiene. There should be pre- and in-service training packages on community based strategies developed for district and extension officers including health assistants (HAs), health surveillance assistants (HSAs), community development assistants (CDAs) and water monitoring assistants (WMAs). Materials for use in the schools should be produced such as a supplementary reader for primary school children and school posters, pamphlets, fliers promoting use of sanitary facilities, cleanliness and personal hygiene at home. Community education materials such as flip charts, posters and fliers should be distributed and used by government extension workers, NGOs and community groups involved in water and sanitation activities. Finally, radio spots, dramas and programmes should emphasise the principal messages for the general public.

This component also seeks to emphasise the importance of information dissemination, strengthening of current networks and forging of new linkages. There should be a focus on improving the quality of support to existing water and sanitation activities already supported by local government, NGOs, donors and community groups. As a focal point for these activities, CBMU should act as a clearinghouse for information on rural water supply community management and maintenance issues.

The major outputs expected this component of the programme include:

- policy guide for integration of water, sanitation and hygiene strategies.
- description of roles and responsibilities of various ministries.
- KAP studies on water use, sanitation and hygiene.
- guidelines for schools on water and sanitation facilities and how to manage them.
- established system, through CBMU, to disseminate information and network NGOs and communities involved in water and sanitation projects.
- practical guidance on how to plan, manage and monitor sanitation and hygiene education programmes.

Water and sanitation capacity building at district and community levels

The overall objective of this component is to orient district leaders to community based water and sanitation strategies and improve their capacities to develop appropriate and achievable plans for accessing MASAF funds. Such capacity building ensures the effectiveness and sustainability of the entire programme. In strengthening community level capacities to plan, manage and maintain water and sanitation systems, inter-sectoral district teams will play a critical role. At that level, strong co-ordination between the inputs of various ministries (especially health, local government, social services and water) is essential. Additionally, efforts among NGOs and government need to be co-ordinated and the actions of these agencies must be supportive of the needs of communities within the district. This complex process will require action on the following fronts;

Research and analysis. Studies in the form of operational research and needs assessment should be conducted in order to examine the current district role in support of community based maintenance of water supply services and to determine what needs in terms of functions and services are not being met. Further, the support needs of communities should also be analysed to determine which level of government is best equipped to fulfil these needs. The experiences and successes of recent or ongoing district level capacity building projects, such as those of UNDP, should be assessed.

Preparation of policy statement. This document will define the roles, responsibilities and relationships at national, regional, district, and community levels with the goal of improving water services delivery and usage. Considerable attention should be given to the fact that the process of decentralisation is just beginning. Linkages between village committees and district authorities need to be established. An understanding of costs must be promoted: whose responsibility they are and full appreciation of the implications of recurrent costs and how essential they are. The policy statement will reiterate the importance of integration of water, sanitation and hygiene education strategies. Once prepared, the document will be widely distributed to concerned parties.

Training. In order to orient partners to the policy and to strengthen capacities to develop, implement and sustain effective water and sanitation strategies, training packages and programmes will be developed and conducted for the following; a) community leaders on strategies and integrated water, sanitation and hygiene strategies and policies, management of health and water committees, selection of caretakers, money management, monitoring serviceability of water supply systems and community mobilisation; b) water poin:

caretakers; artisans in sanplat and pit latrine construction; district teams on strategies to enable them to prepare affordable and effective district water and sanitation plans; c) community leaders and members on the establishment of district level committees; d) district civil leaders and NGOs; and e) district trainers of trainers.

The training programmes outlined above will lay the foundation for community and district level empowerment that is required to make CBM a reality. UNICEF, together with NGO partners, should support this crucial capacity building. In addition, a national level workshop for ministry officials and NGOs should be conducted in order to reinforce the messages being disseminated at district and community levels.

The major outputs expected of this component of the programme include:

- district water and sanitation guidelines on policies, costing, prioritising, involving other sectors working with communities.
- guide on "How to Develop, Manage, and Monitor the District Water and Sanitation Plan".
- district and community level water and sanitation plans for submission to MASAF zone offices.
- a capacity, within districts, to monitor serviceability of water points.

Community water resource management and protection

Rural and peri-urban communities remain marginalised in many developing countries as resources and political support become concentrated in urban centres. This trend is observable in Malawi. Both sets of communities pose their own type of problems. Rural communities are generally well dispersed within a watershed and have intimate links with micro-scale watersheds and aquifers. The rapidly growing peri-urban communities remain ignored by reticulated urban systems that may have been designed many years before the location and rate of growth was anticipated. They are often thrown back onto highly localised sources of water that are likely to be severely contaminated due to the concentration of habitation with rudimentary sanitation arrangements and un-regulated industrial activity.

Unless these communities are exploiting fossil groundwater de-coupled from contemporary recharge, there is both an impact and a dependency on shallow groundwater circulation. It is this shallow circulation that replenishes soil moisture and aquifer storage and sustains aquifer discharge to springs and the baseflows of streams. On the extensive plateaux of Malawi, this circulation is characterised by the occurrence of dambos whose hydrological and hydrogeological regime is determined by seasonal rainfall inputs and soil storage capacity..

Scale of intervention for CBM: watersheds and rural communities. All communities are linked to drainage units. Unless they happen to be riverside communities, most rural communities in Malawi (including lakeside villages which depend on influent watercourses) are linked to first or second order drainage units so that micro-scale catchment management assumes a natural focus for many rural activities. However, since these micro-scale catchments are elements of sub-basin and basin systems, the net impact of the micro catchment management is ultimately expressed at the basin scale. It is therefore desirable that

catchment management occurs at the micro-scale in order to promote sustainable natural resource management at all basin scales. However, it is often difficult to reconcile the need for overall natural resource management with the demands of subsistence agriculture and population growth at the level of individual rural communities.

Close attention has to be paid to the establishment of socio-cultural framework with relation to water and the adoption of compatible mechanisms for negotiation and participation between all user groups.

In arid and semi-arid zones, a water resource management strategy generally has three principle technical objectives:

- Identify groundwater circulation and its overall physiographic and hydrogeologic framework: the recharge, transmission, storage and discharge regimes. This has important implications for sustainability of the resource and modes of exploitation and sanitation.

- Evaluate the sustainable yield of shallow circulation and take account of dry season recession.

- Establish the financial and quality/health sustainability through appropriate modes of exploitation.

In sub-humid and humid zones shallow groundwater circulation may discharge through more accessible springs and seepage zones in which case hand-dug wells, infiltration galleries and spring boxes can be considered. A disadvantage of using the shallower circulation is the need to pay more attention to shallow aquifer/soil horizon protection.

Peri-urban and larger rural centres may require larger scale exploitation involving well fields and watercourse intakes. Recharge and baseflow regimes have to be fully understood to ensure long term operation of schemes.

Hydrogeology and community management. Animation/sensibilisation is fundamental to ensure sustainability through community management and a programme needs to be started and sustained throughout the exploration, drilling and installation phases. This has to involve the participation of women in the formation and membership of VWHC committees. It also has to involve community education in environmental sanitation to avoid pollution of shallow aquifers and watercourses. This arrangement should be promoted as a 'win-win' game with both the communities and the environment benefiting. This is particularly important for communities located on or near lakes and wetlands. In Malawi's case, the plateaux surfaces are characterised by a high density of dambos which represent relatively fragile wetland ecosystems. Dambos play an important part in household food security by providing opportunities for recession agriculture as water tables levels fall on the margin of the dambo. Some opportunity also exists for small scale supplementary irrigation sourced from dambo margin wells/intake pits. In all instances, the environmental sanitation in the vicinity of the dambo is a matter of concern to prevent contamination both of the shallow water environment and growing crops. As with aquifer and lake protection, community action is required to limit and control access by livestock and the location of pit latrines close to the marginal water table of the dambos.

The types of activities that can be promoted under community hydro-environmental protection could include:

- tree planting and terracing
- construction of recharge bunds
- clearing and fencing of watercourses, ponds and canals.
- arrangement of segregated stock watering points
- improved solid waste disposal
- construction of storm drains
- rainwater harvesting
- rehabilitation and improved protection of wells and springs
- improved irrigation practices

These types of activity are best mobilised through community action committees but it will require strong technical support of related ministry assistants and District council facilitators to explain local hydro-environmental characteristics and problems.

In addition careful thought may have to be given to aquifer protection by zoning of land-use to prevent encroachment of settlement and pit latrines in active recharge areas. The role of District planners and the drafting and enforcement of national regulations or by-laws under the Water Resources Act may have to be considered.

Alternative technologies. Whatever systems/designs/specifications are decided upon, it is assumed that CBM will be open to the application of new technologies as they become developed and more cost effective. This could include solar and wind powered pumps. However it should be noted that to date there have been no successful and cost-effective large scale implementation of either solar or wind powered technologies at the community level.

Gender-balanced approaches

Experiences from other countries have shown that women play a critical role in the success of water supply and sanitation programmes. CBM and VLOM place women at the centre at every stage of the implementation strategy. Water supply and sanitation in Malawi has focused mainly on men as decision makers. The role of women has usually been that as carriers of water and doing housework.

Though the practical benefits of improved water facilities is greatly realised by reducing the drudgery of water collection, sustainability requires that women are part of a gender-balanced approach in decision making, planning and implementation and maintenance. Similarly, the management of water points and ensuring good hygienic practices should not only target women and children but men as well. Similarly, it is often noted that while women are critical to the success of water and sanitation programmes and may be willing to pay for part of the costs, they often do not have control over the household purse to be able to do so.

Experience has shown that some to the water supply and sanitation programmes that were implemented under the PHC programme have failed though they were community based. Most of the village health committees which were male dominated are no longer functioning. Men and women should have an equal representation on the committees and voice in policy formulation, implementation and management of the projects. Unfortunately there are not many women in the highest offices in government that can influence the policies in the sector. In Malawi the sector is dominated by men with a few women as extension workers in Ministry of Health who are responsible for hygiene education and sanitation. In the water sector there are no top female managers and very few extension workers.

The objective is to clear gender imbalances and create equal opportunities for both men and women in decision making, planning and programming of water and sanitation projects. Outlined below are some areas of consideration for gender equity:

- Government should be encouraged to recruit women in all levels, highest, middle management and extension workers at field level. Women's needs and opinions are then more likely to be considered at all levels. This will help build up confidence in the women at local level.

- Deliberate increase in women training in technical fields to be assimilated into the sector.

- Equal representation of men and women on the Village Health and Water Committees.

- Train both men and women in making sanitation slabs and maintenance of water supply facilities at village level.

- Involve men and women at all levels both beneficiaries and planners in choice of technology. This is important for acceptance, usage and management of facilities without any gender bias. However it has to be borne in mind that if technology is not appropriate for women, then it is not appropriate at all. Choice of technology will depend on women's preference and whether they are able to maintain and pay for maintenance of the facility.

- Equal partnership of men and women in the homes-sharing of responsibilities on water and sanitation management. Technology choice should also address the issue of tasks that have culturally been considered women's role, especially water collection. In order to reduce women's burden of water collection, methods of water collection and transportation which enable men to take part should be developed if possible. Men will not collect water from traditional sources, nor will they carry water in a clay pots on their heads.

- Communication materials are often general messages and do not address needs of men and women separately. For greater impact it is better that issues addressing women and girls, men and boys be developed separately. This is important on hygiene practices and behavioural change. This should be done without victimising the women whom most of messages are directed at.

4.2 Accelerating Rural Water Supply and Sanitation Coverage

In addition to the above activities, four further complementary actions are required to increase government capacities to respond to recurrent drought conditions and to accelerate water and sanitation access and coverage:

- strengthen central/regional government hydrogeological mapping, assessment of baseflows for potential gravity schemes and drilling capacities to more cost-effectively provide water
- support district level initiatives to implement water and sanitation projects
- incorporate UNHCR handpump installations in former refugee areas into the national rural water and sanitation programme
- increase sanitation coverage in food deficit areas through food for work.

Improving government drilling and supervising capacities

The overall objective of this component is to strengthen the Government's ability to quickly and cost-effectively clean, deepen and drill new boreholes particularly, in drought affected areas. Malawi currently has six competing private sector drilling contractors which has resulted in average drilling costs of about $4,500 per completed and installed borehole which compares favourably with similar boreholes for handpumps in other parts of Africa. Although these contractors can be mobilised to respond to drought situations if funds are available, it is essential that Government maintains a limited amount of its own capacity. Government rigs are sometimes needed to work in difficult areas where private contractors are often not willing to go or when they cannot be mobilised fast enough. Furthermore, Government rigs are useful for cleaning or deepening of boreholes when required and can serve to help down private sector prices.

Government also needs to maintain expertise in hydrogeology, geophysics, well design and drilling in order to effectively monitor and supervise the quality of work done by private contractors. The long-term sustainability of community based handpump maintenance is very much dependent on the quality and life of the boreholes. A poorly drilled or designed borehole will result in premature handpump breakdowns or, even worse, a collapsed or dry bore.

To accomplish the above, the Groundwater Section of the Water Department will need support for in-service training of hydrogeologists, drillers, rig/compressor mechanics and storekeepers as well as provision of a limited amount of essential spares. As some of the air rotary drilling equipment currently with the Water Department was supplied through Japanese aid (JICA) attempts should be made to obtain funding for this activity from JICA.

Private sector capacity and role

The private sector has an important role to play in both the acceleration of coverage and sustainability of completed systems. The six private drilling companies in Malawi have a total of 50 rigs compared to 14 rigs with the government (see Table 5). This capacity can be mobilised to accelerate service delivery if funds are available. However, the technical capability of the drilling contructor must be carefully assessed and their work closely supervised. Private sector drilling personnel could also be included in training programmes for government staff.

Table 5: Drilling capacity in Malawi

Firm	Rotary	Cable Tool	Total	Remarks
Government Rigs	7	7	14	Cable rigs in bad condition and one rotary not working
Scandrill/Borehole Drillers	5	12	17	Local. All cable rigs old
Waterboring Contractors	-	11	11	Zimbabwean firm. All old rigs
Whitehead and Jack	-	10	10	Zimbabwean firm. All old rigs
Wells Drilling	-	3	3	Local
Contact Drillers	6	-	6	Local. 2 not working
Drill Tech	2	-	2	Local. New rigs
Christian Service Committee (CSC)	1	-	1	Local. New rig
Den Field and Associates	-	1	1	Local. Old rig
Totals	**21**	**44**	**65**	

The local manufacturing sector also has a key role to play in the production of PVC pipes for borehole casing and screen, transmission pipe for gravity-fed schemes and rising main pipe for Afridev handpumps. In addition, the local manufacture of spare parts for the standard Afridev as well as development and production of a direct action Afridev are all important for long-term sustainability of the programme. However, the quality of all the plastic elements mentioned is crucial to the success of the programme and support should be given to assist companies with quality control and field testing. This is an area where UNICEF has already taken the lead.

Support to district level authorities and NGOs for implementation of rural water and sanitation projects with priority given to schools

Standard agreements should be developed, with district level bodies such as MASAF , DDCs and NGOs which could include the following types of support:

- handpumps, tools, platform shutterings, cement, spares.
- cost of boreholes, platforms and installation of handpumps.
- equipment to construct dug wells.
- supplies and equipment for latrine construction.
- cost of providing complete water and sanitation facilities to schools and clinics.
- training in any of the above.

This is an area that UNICEF could consider supporting as a way of strengthening the role and potential of NGOs.

These agreements will also be signed by CBMU to help ensure that district level projects incorporate the integrated water and sanitation concept and are provided with all the supporting guidelines and IEC material required. The above mentioned inputs will be used as incentives to encourage as many partners as possible to implement water and sanitation projects in order to meet the goals of the *National Programme of Action for the Survival, Protection and Development of Children in the 1990's.*

Utilising the investments in former refugee areas

As part of its larger programme of assistance to Mozambican refugees, UNHCR has been active in pursuing a clean water supply for incoming refugees into Malawi since 1986. Many of the settlements were on marginal land, where a clean water supply had not been developed, and often where groundwater resources were poor.

In consultation with the Water Department, the coverage ratio was initially set at one water point per 1000 users. As the programme progressed, this was revised to one water point per 750 users. The actual coverage varied from area to area, with an eventual 1572 water points being constructed for approximately 1 million refugees giving an average coverage of around one water point per 640 users.

As requested by the Water Department, and in line with UNHCR's early concerns about sustainability, VLOM-type handpumps have been used on most water points; however, the implementation of VLOM among the beneficiaries has not been successful. This was essentially because the refugees saw their stay in Malawi to be temporary and there were no large scale successful examples of VLOM in Malawi which could serve as a model in refugee areas.

Work associated with sanitation was implemented by various health NGOs, who were active in all refugee settlements. They were largely responsible for siting and organising latrine construction, garbage disposal, vector control, market cleanliness and organising and training village health committees. The coverage for latrines was within the UNHCR

minimum guidelines of 1 latrine for every 20 people, with the exact ratio ranging from 1 per 6 people to 1 per 10 people, depending on environmental conditions and the NGO implementing the programme. In order to minimise on the use of wood, large diameter sanplats were fabricated in each camp and distributed to the refugees. This was largely successful, as could be witnessed by the many refugees who took their sanplats with them when moving back across the border.

By mid-1993, when some of the refugees began to voluntarily return to Mozambique, the question of hand-over of the refugee water points to the Malawi Government began to be discussed among the various partners on the programme. Sustainability was a key issue in the debate of how the Water Department would be best able to absorb these additional boreholes and shallow wells. The Water Department was asking that the hand-over be done through its programme of Community Based Management (CBM), where beneficiary communities would be technically and socially trained to be responsible for the maintenance of their water points.

A proposal from the Water Department for UNHCR to support its national policy of CBM was presented for funding in September 1994. It requested financial assistance for both the Water Department and Save the Children Fund (SCF)-UK to manage the CBM programme in 10 of the 12 refugee hosting districts. The other two districts, Nsanje and Mchinji, were already receiving assistance with CBM from UNICEF and SCF-UK. The first tranche of UNHCR money was released to the Water Department in February 1995 although the training has not yet been organised.

The water supply and sanitation facilities in the refugee areas can only be fully utilised if they are integrated into the national programme through the CMB approach and implemented through an agency. In this regard UNICEF has agreed in principle with UNHCR to take over the UNHCR CBM activities and ensure that the Water Department staff previously involved in the refugee programme are trained as trainers for CBM activities. UNHCR funds earmarked for this training will be channelled through UNICEF who will organise and monitor the training of trainers together with SCF-UK. This will constitute the first step toward formation and training of the village health and water committees around the former refugee handpumps.

Linking food for work with water supply and sanitation service provision

Traditionally, in Malawi "food for work" has been used as a mechanism under refugee conditions. There is now a change in so far as it is being considered as a means of supporting more sustained development in appropriate areas. The Government has indicated interest in taking advantage of these opportunities.

The availability of food for work presents an opportunity to accelerate access to rural water and sanitation facilities. However, for water supply, there is a real concern of undermining the long tradition of community participation and labour in the construction of gravity-fed piped water schemes by providing food which in the long run is not sustainable. Furthermore, the CBM approach to maintenance of water systems through voluntary committees and caretakers does not lend itself to food for work.

On the other hand, the promotion of improved sanitation, food for work could play a very useful role as an incentive to encourage individual households to construct or improve their latrine. Particularly in food deficit areas which are the target for food for work, it is difficult to talk about latrine construction when people do not even have their minimal basic food requirement. Construction of household latrines would not interfere with or undermine community participation efforts in communal voluntary activities. In addition, food for work could be successfully used to mobilise community action for construction of school an health clinic latrines. Through a flexible application of food for work, its scope could be broadened to include: provision of seeds for planting instead of food which could be a means of promoting food self-sufficiency; provision of food to community leaders to distribute to the most needy; provision of food to individual families on completion of a latrine; or provision of meals at a work site.

4.3 Monitoring

Accurate and reliable information on the status of water supply and sanitation services on a community, district and regional basis is essential for effective planning and management. Details of non-functioning boreholes, dried-up wells, broken pumps and taps are required if remedial action is to be taken. Such information can only be available if a water supply and sanitation monitoring system exists as an integral component of the sector's institutional structure. In Malawi the absence of such a system has been identified as a major constraint to sector development. It has also resulted in progressively deteriorating levels of service. Only now is it realised that much of the progress which was reported, particularly for rural water supply coverage, has in fact been reversed. Boreholes have become inoperative, shallow wells have dried up as water tables have fallen (through both drought and over-abstraction) and gravity systems have had to operate under capacity. All this has happened without the real scale of the problem being appreciated.

The lack of a reporting mechanism linked to executive levels in the Water Department is a serious deficiency. For rural populations, the result has been long periods without services and with little or no prospect of action being taken.

Appreciating this need for better monitoring, the Government has approached UNICEF to provide support in developing a National Monitoring System within the Water Department with a network for data collection which will be community based. The objective of the initiative is to establish a sustainable management and monitoring system for water and environmental sanitation.

To initiate the first phase of the work the requirements have been set out in a project proposal submitted to UNICEF covering the establishment of the National Monitoring Units (NMU) in the Department of Water Department and the strengthening of the community based network of data collection (rural water supply in the first instance). Capacity will have to be built-up at community, district, regional and national levels.

The first phase activities include:

- develop national plan to strengthen sector monitoring through a facilitated participatory workshop
- training two core staff
- training 52 monitoring assistants (2 per district)
- training community based monitoring enumerators (WMAs, HSAs and CDAs)
- design of monitoring procedures
- provision of necessary premises, supplies & equipment including hardware & software.

Once experience has been gained in the operation of the monitoring system in the rural sub-sector, and the new Water Board structure, as proposed in the NDWP, has been established the phased development of the monitoring system and the role of the NMU will be expanded to include urban sub-sector and include sanitation.

The monitoring system to be developed must be multi-faceted and involve collaboration and co-operation among all government, parastatal and other bodies with responsibilities in the sector. As such it will play an important role in harmonising and co-ordinating sector plans and activities. It will also have to have the flexibility to respond to need at the central, regional, district, project and community levels for monitoring and evaluation.

The outline of the steps foreseen for the development of the full national monitoring system are:

- National Monitoring Unit (NMU) as the core of the system, which in the first instance will focus on rural water supply within the Water Department;

- expansion and development of the rural system to include more detailed information on technologies, utilisation of systems, breakdowns/maintenance, supply discontinuity records and water quality data;

- initiation of a rural sanitation monitoring component;

- establishment of a monitoring section within the Lilongwe and Blantyre Water Boards within the context of institutional strengthening as part of the NWPD;

- expand the capability of the NMU for the collection of and handling of information and for reporting. A Monitoring Co-ordination Committee would also be required at this stage to harmonise systems and develop national monitoring policies.

- creation of monitoring sections in each of the three planned regional Water Boards, in a similar fashion to those in the Lilongwe and Blantyre Boards.

5. A Programme of Action

Given the present state of coverage in rural water supply and sanitation the sustainable promotion and acceleration of service provision can only be realised through CBM. CBM clearly has to run parallel to water point installation to ensure sustainability. However, CBM may also be viewed as a facilitative mechanism for capital investment in rural areas, both in soliciting donor support and local government commitment. If CBM can be used as a tool to prepare the ground for water point installation, it provides both a barometer of community willingness to maintain water points and an environmental health education tool. Investments can then be targeted at receptive communities and drilling/water point campaigns can be planned with a maximum chance of ensuring sustainability.

Above all, CBM should be viewed as a linking mechanism for water service delivery with sanitation and hygiene. The other linkages to be established include primary health care (particularly the control of diarrhoeal diseases), education, household food security and the environment.

An outline programme of these activities is presented in Figure 4. The programme consists of three principal sub-programmes: a CBM sub-programme, a parallel water supply and sanitation acceleration sub-programme and a monitoring sub-programme links both. UNICEF funds can only sensibly address areas in which it has a comparative advantage. Consequently three core areas of activity are identified within each of the sub-programmes. Together these three areas of activity form a core programme which can be realised with UNICEF resources. It is anticipated that continued support and collaboration from other UN agencies, the World Bank, ADB and other regional organisations, bilaterals and NGOs can be co-ordinated to complement the core programme wherever their comparative advantage is greatest.

Proposed UNICEF supported core activities:

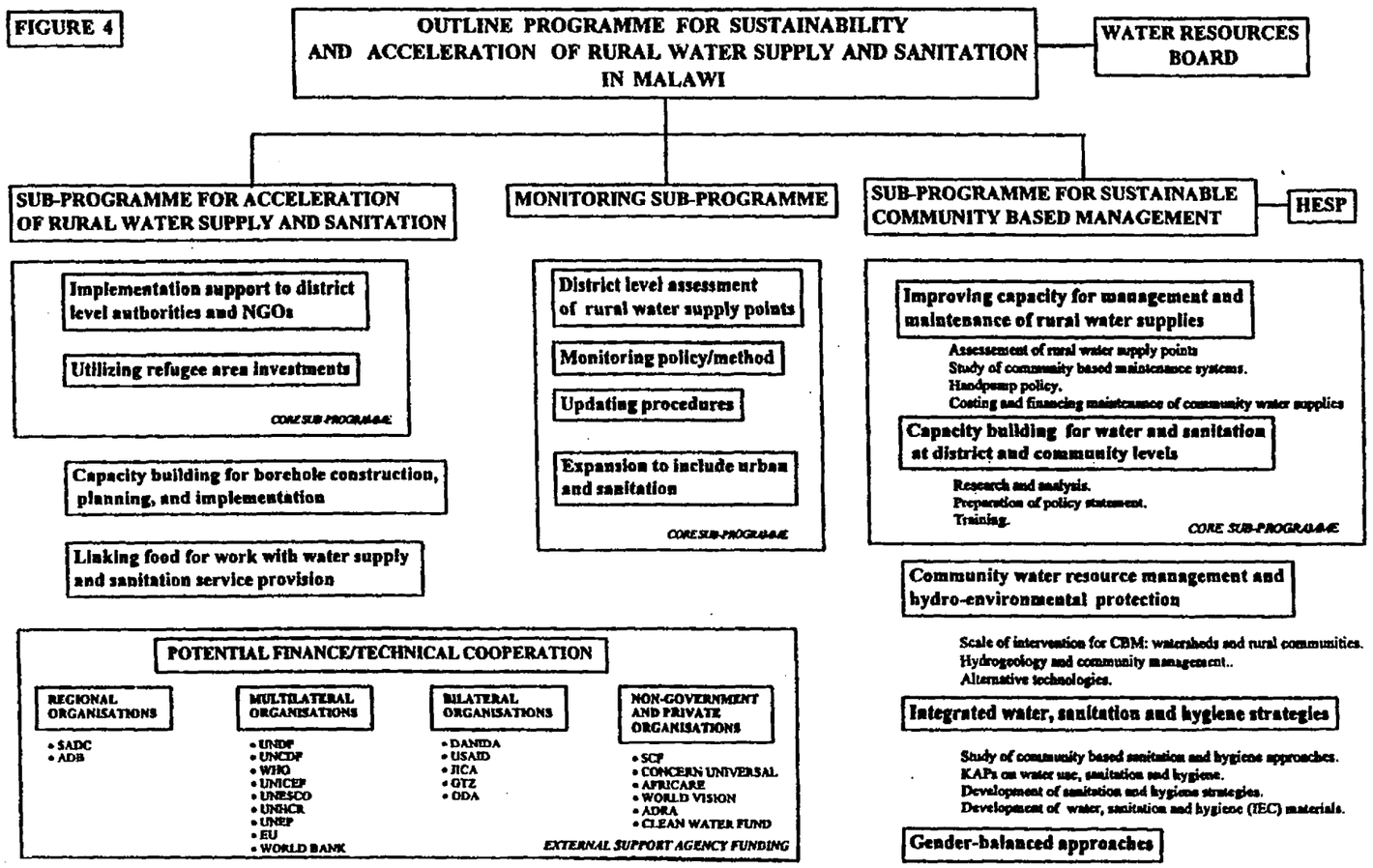
<u>CBM subprogramme</u>
- Improving management and maintenance of rural water supply
- Capacity building at district and community level

<u>Monitoring subprogramme</u>
- Monitoring policy and methodology
- District level assessments
- Updating procedures
- Extension into urban areas and sanitation coverage

<u>Acceleration sub-programme</u>
- Implementation support at district level
- Utilising handpumps in former refugee areas

The remaining extra-budgetary sub-programme components are outstanding sector requirements that could be addressed and supported by other funding agencies on a bilateral or multilateral basis wherever the comparative advantage of the respective agencies is greatest. They would complement and strengthen the core activities by being integrated with

FIGURE 4


OUTLINE PROGRAMME FOR SUSTAINABILITY AND ACCELERATION OF RURAL WATER SUPPLY AND SANITATION IN MALAWI
WATER RESOURCES BOARD
SUB-PROGRAMME FOR ACCELERATION OF RURAL WATER SUPPLY AND SANITATION
MONITORING SUB-PROGRAMME
SUB-PROGRAMME FOR SUSTAINABLE COMMUNITY BASED MANAGEMENT
HESP
Implementation support to district level authorities and NGOs
Utilizing refugee area investments
CORE SUB-PROGRAMME
Capacity building for borehole construction, planning, and implementation
Linking food for work with water supply and sanitation service provision
District level assessment of rural water supply points
Monitoring policy/method
Updating procedures
Expansion to include urban and sanitation
CORE SUB-PROGRAMME
Improving capacity for management and maintenance of rural water supplies
Assessement of rural water supply points
Study of community based maintenance systems.
Handpump policy.
Costing and financing maintenance of community water supplies
Capacity building for water and sanitation at district and community levels
Research and analysis.
Preparation of policy statement.
Training.
CORE SUB-PROGRAMME
Community water resource management and hydro-environmental protection
Scale of intervention for CBM: watersheds and rural communities.
Hydrogeology and community management..
Alternative technologies.
Integrated water, sanitation and hygiene strategies
Study of community based sanitation and hygiene approaches.
KAPs on water use, sanitation and hygiene.
Development of sanitation and hygiene strategies.
Development of water, sanitation and hygiene (IEC) materials.
Gender-balanced approaches
POTENTIAL FINANCE/TECHNICAL COOPERATION
REGIONAL ORGANISATIONS
• SADC
• ADB
MULTILATERAL ORGANISATIONS
• UNDP
• UNCDF
• WHO
• UNICEF
• UNESCO
• UNHCR
• UNEP
• EU
• WORLD BANK
BILATERAL ORGANISATIONS
• DANIDA
• USAID
• JICA
• GTZ
• ODA
NON-GOVERNMENT AND PRIVATE ORGANISATIONS
• SCF
• CONCERN UNIVERSAL
• AFRICARE
• WORLD VISION
• ADRA
• CLEAN WATER FUND
EXTERNAL SUPPORT AGENCY FUNDING

the overall programme architecture, as indicated in Figure4 . The project would actively seek funding and/or support from the relevant donors and agencies wherever expressions of interest can be solicited and thereby ensure the long-term sustainability of a more comprehensive programme.

6. Recommendations for Implementation of the Programme

If the CBM outline programme is considered a sensible way forward to improve sustainability and accelerate coverage, then four areas of government action can be recommended.

Presentation of Report and Timing

The intention is to present the foregoing as a Government of Malawi document compiled with the support of the United Nations. A suitable forum for such a presentation will be a National Consultation proposed by WHO through the Ministry of Health and Population. This Consultation is an attempt to launch WHO's Africa 2000 initiative which was adopted by the World Health Assembly in 1994 and is aimed at increasing awareness of water supply and sanitation needs in order to create a new partnership between African States and external development organisations. The objective is to increase internal and external resources in order to accelerate sustainable expansion of water supply and sanitation services. This report could therefore be one of the main discussion documents for the Consultation.

The provisional timing for the Consultation has yet to be confirmed, but it is hoped that it will occur in the last quarter of 1995.

Ministerial Co-ordination

Experience in the sector has shown that co-ordination at field level works effectively. Departments and Offices of the various line ministries co-ordinate their respective sector activities through the District Commissioners and manage to achieve good co-ordination in the implementation of district and area development projects. The same cannot be said for the national level. Co-ordination of water and water related issues is poorly institutionalised with no formal inter-ministerial co-ordination of water, sanitation and health. Clearly the the value of such co-ordination should be given a high priority if poverty alleviation and basic welfare provision is to be extended to the whole of the country. For this reason it is proposed that the CBMU is represented at Deputy Controller level in the Water Department and that it is accorded full representation on the proposed Water Resources Board.

Funding Arrangements

If Government is to focus on CBM as a means of promoting and accelerating coverage then it is recommended that consideration is given to the following;

- Greater allocation of funding to rural water supply and sanitation in the NWDP
- Advocacy for increased external funding for rural water supply and sanitation with the adoption of sustainable strategies under CBM
- Solicit support for the programme from donors
- Monitor existing arrangements for funding to the sector to ensure compatibility with CBM objectives

Enabling Legislation

The adoption of CBM also necessitates ensuring that laws and regulation encourages the notion of ownership. Government can support the ownership of water points through enabling legislation. Property rights over water and sanitation installations have to be made clear. Equally the obligations of communities with respect to the protection of surface and groundwater resources should be spelled out. This may involve a consideration of the appropriateness of existing customary rights to land and water. These are issues upon which the successful implementation of CBM will hinge since communities have to have their interest in operating and maintaining a capital grant from Government clearly defined. In addition the protection of the communities' hydro-environmental integrity will depend very much upon pollution control in the vicinity of water points and regulation of land-use in catchment areas.

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ANNEXE I TERMS OF REFERENCE (TOR)

SUBJECT: SECTOR STUDY FOR RURAL WATER SUPPLY AND SANITATION

1. Background and purpose of the study

The proposed sector study for rural water supply and environmental sanitation emerged as one of the recommendations in the Aide-Memoire prepared by the WES Mission from UNICEF New York which was led by G. Ghosh the UNICEF WES Chief. The mission visited Malawi between 10 -17 November 1994.

The population in Malawi is largely classified as rural although more recent figures seem to indicate increased migration to the major urban centres. Urban population has increased from 11% in 1989 to approximately 15% to date. This still leaves 85% of the population living in the rural areas.

Assuming that all facilities are operational, it is estimated that 58% of the rural population has access to safe water through some 10,000 boreholes and 5600 protected shallow wells all fitted with handpumps and 56 gravity piped schemes with untreated or semi-treated water. This leaves 42% of the rural population still unserved. The actual situation in the field is that only 60% to 70% of the handpumps and 80% of the taps are working at any one time because of problems in operation and maintenance logistics. The actual coverage is therefore less than estimated. Some of the gravity schemes are running dry due to high incidences of drought in this region. Some schemes may become non-operational as their catchments are endangered through encroachment due to increased demand of agricultural land. The operation and maintenance burden for handpumps has also been accelerated with the additional 1,500 water points left by Mozambican refugees now being utilized by the Malawian rural population. These water points were installed with the assistance from UNHCR.

The Malawi Government through the National Water Development Project (NWDP) being financed by the World Bank has developed policies and strategies for development of Malawi's water resources. These policies and strategies focus mainly on the urban population. It is therefore imperative that implementable policies and strategies be developed as soon as possible for the rural water supply and environmental sanitation to link programmes such as those of MASAF and food for work targeting schools and private sector involvement.

It is being proposed that these policies and strategies be developed through a sector study to be carriedout by a team comprising the major donors in WATSAN with UNICEF taking the coordinating role. This will make it possible to get commitment from the participating donors and others.

2. Objectives

It is estimated that 75% of all the rural population will have access to safe water from groundwater sources. Development of gravity schemes are restricted to areas of particular geomorphological conditions and within protected catchments (Water Department, 1992). There is therefore need to develop a further 22,000 boreholes or shallow wells by the year 2,000 for complete coverage of the rural population. The following are therefore the objectives of the study:

a) To develop implementable policies and strategies that should aim at an accelerated programme for full coverage of WATSAN in the rural areas of Malawi by a certain date (to be specified).

b) The policies and strategies should be community based with the involvement of women and their empowerment.

3. Specific Activities of TOR

3.1 Specific Activities for the Study Team

3.1.1 To review the present water supply and environmental sanitation for the rural population in terms of coverage, functioning and possibilities to service existing systems and identify reasons for high percentage of defunct systems.

3.1.2 In order to achieve 3.1.1, the team should carry out the following:

- Meet the Resident Representative, the Senior Programme Officer, the WES Personnel and others within UNICEF;
- Review existing reports, publications and papers;
- Conduct field trips to some selected rural groundwater and gravity piped projects within the country and,
- Hold discussions with key ministries of Government of Malawi, donor agencies and NGOs.

3.1.3 To develop strategies on how the rural communities will have access to the Malawi Social Action Fund (MASAF) for WATSAN and its relation to proposed interventions for rural water supply and sanitation.

3.1.4 To investigate with WFP on possible mechanisms of how best food for work programme could be integrated in WATSAN programmes.

3.2 Specific Issues to be included in the Final Report

3.2.1 To establish whether HESP and Community Based Management (CBM) for WATSAN in rural areas should be combined or separated.

3.2.2 Rural water supply and environmental sanitation is being advocated to be community based. The study should therefore establish who should best handle CBM and how it can be institutionalized by the government.

3.2.3 To develop programme directions with specific targets.

3.2.4 To summarize the experiences with alternative mini-water supply reticulation systems for the rural areas by using appropriate technologies such as those that would tap natural energy sources e.g. solar or wind as opposed to having handpumps for the entire rural water supply.

3.2.5 Specific recommendations on how an accelerated programme for WATSAN can be achieved and its economic implications.

3.2.6 Make specific recommendations on further utilization of water points left by Mozambican refugees

4. Composition of the Study Team

The study team comprised the following:

J. Burke, Technical Adviser, UN/DSSMS, New York
F. Devisoni, Min. of Irrigation and Water Development
K. Gray, Consultant, UNICEF (Team Leader)
R. Kafundu, Head WES, UNICEF, Lilongwe
J. Kazombo, Ministry of Local Government
L. Milazi, WES, UNICEF, Lilongwe
A.W.C. Munyimbiri, Chief Environmental Health Officer, Ministry of Health
A. Nigam, Economist, UNICEF, New York
J. Nyasulu, Lecturer, School of Nursing, University of Malawi
S. Rusk, UNHCR, Lilongwe
G. Watters, Sanitary Engineer, WHO, Geneva

5. Timing

The review will take three weeks (24 April - 14 May 1995) including preparation of the draft report.

ANNEXE II LIST OF PEOPLE MET DURING THE MISSION

Ministry of Irrigation and Water Development

E.Z. Laisi	:	Controller of Water Services
C.C. Govati	:	Acting Deputy Controller (Water Resources)
F. Devisoni	:	Senior Hydrogeologist
F. Kwaule	:	Water and Sanitation Coordinator
Gary McFarlane	:	Social Scientist (seconded from SCF-UK)
B.N.C. Gondwe	:	Principal Civil Engineer
R.M.A. Champiti	:	Chief Civil Engineer
K. Liyanage	:	Mechanical Engineer (UNDP)
K. Banda	:	Acting Chief Hydrogeologist
M.J. Kandulu	:	Project Leader NWDP

Ministry of Health and Population

A.W.C. Munyimbiri	:	Chief Environmental Health Officer
M.F. Magombo	:	HESP Coordinator

Ministry of Local Government Rural Development

J.F. Kazombo	:	Sanitary Engineer
A.C.L. Lwanda	:	Principal Municipal Engineer

Ministry of Women and Children, Community Services and Social Welfare

Mr. Butao	:	Chief Community Development Officer

World Bank

P. Pohland	:	Deputy Representative

USAID

C. McDermott	:	PHN Office Chief

European Union

P. Schildkamp	:	Rural Development Advisor

ADRA Malawi

M. Church	:	Director
L. Tewesa	:	Water and Sanitation Manager

Concern Universal

D. Hillyard : Field Director

Africare

Phyllis Jones : Filed Director

World Vision International

C. Chikusa : Geologist

Nazarene Vocational School

R. Gailey

Ministry of Economic Planning and Development

C. Mandala
Mr. Kutengule
Mr. Mandala
Mr. Cliff
Dr. Bimal Lodh : Economic Consultant

UNICEF

Dr. Natalie Hahn : Representative
D. Palm : Programme Coordinator
D. Malewezi (Mrs) : Head of Education Section
R. Kafundu : Head of WES
L. Milazi : Programme Officer (WES)

UNDP

A. Chintedza : Programme Officer

WHO

Dr. Chuwa : Representative
B. Chandiyamba : DPC Water and Sanitation

UNHCR

Y. Makomeni : Representative

World Food Programme (WFP)

C. Clark : Emergency Officer

S. Green : Project Officer

APPENDIX III

FIELD VISITS

Wednesday April 26th

Field visit Lilongwe-Blantyre
Meeting with NGOs Blantyre

Thursday April 27th

Field visit Ngabu/Nsanje Southern Region

Friday April 28th

Field Visit Ngabu/Chikwawa

Saturday April 29th

Field visit Zomba/Mongochi/Malindi

Sunday April 30th

Field visit Livulezi

Thursday May 4th

Field visit to peri-urban areas, Lilongwe

Wednesday May 10th

Field visit to Mchinji Groundwater Development Project (JICA)