Global Water Partnership Southern Africa

IWRM SURVEY AND STATUS REPORT:

MALAWI

Elton Laisi
CENTRE FOR DEVELOPMENT RESEARCH AND INFORMATION IN SOUTHERN AFRICA (CEDRISA)

Lilongwe

March 2009

EXECUTIVE SUMMARY

Malawi's geographical positioning in southern Africa allows it to receive adequate rainfall influenced by the Inter-Tropical Convergence Zone, the Congo Air and the South-Easterly Winds leading to normal and above normal flows in rivers and streams during most of the years. The existence of Lake Malawi and other smaller lakes makes the country one of the most blessed in terms of water resources availability in the sub-region. However, due to climate variability, climate change and water use and management practices, the country faces daunting challenges which could see the per capita share of water resources plummeting to very low levels in the near future.

Water resources will be at the centre of socio-economic development of the country which, has in recent years, seen rapid economic growth of more than 7 per cent per year, rapid urbanisation of not less than 6 per cent and a population growth rate of more than 2 per cent. Its agriculture, power generation, tourism, transport, construction, fisheries, forestry resources, health, education and other sectors will continue to depend on the availability of water resources to which extent government should institute strategies that strengthen sustainable water resources management. This can best be achieved through Integrated Water Resources Management and Water Efficiency (IWRM/WE) in which all stakeholders take part in decision making processes.

Stakeholder consultations and collaboration will promote sustainable use of water resources in which there are limited losses and wastage, limited incidences of pollution, better institutional arrangements, harmonised policies and laws and where monitoring and evaluation of water-related projects is carried out on regular basis. With population now standing at slightly above 13,000,000 people, water demand management must be a regular exercise to determine current use and future projections and how the resource can best satisfy that demand. Solutions should also be identified and applied for the key challenges facing the water sector which include poor catchment management, inadequate water supply and sanitation, inadequate stakeholder coordination, unharmonised policies and laws and capacity building.

While effort has been made in revising sectoral policies and legislation in recent years, these policies have been developed with minimum consultation except for the National Water Policy which attracted a wide cross-section of stakeholders. It would therefore be prudent to consider aligning other sectoral policies to the National Water Policy as it embraces the needs of all other sectors. In recognition of the fact that IWRM/WE promises a new culture of sustainable water resources management, measures for rearranging institutional structures are needed where there is minimum disruption of human, financial and technological resources.

The completion of the IWRM/WE Plan in Malawi is another step in the right direction which calls for concerted effort towards is approval and final adoption. The Plan which has a number of important development projects need to advance to new ground by beginning the implementation of projects outlined therein before they are regarded irrelevant by the close of 2012. The satisfactory implementation of these projects and the realisation of the desired outputs and outcomes are dependent on how fast the government will establish the National Water Authority which will take up the responsibilities of the current Water Resources Board and the final devolution of responsibility of water resources management, allocation and use to Catchment Water Authorities. With the formation of these two institutions, it is hoped that there will be adequate human, financial and technological resources for satisfactory monitoring and evaluation of water projects, supervision of Water Boards in information collection, processing, analysis and archiving, improvement in data quality, informed decision in water allocation, pragmatism in setting water tariffs and water pricing.

The country's path towards sustainable socio-economic development and growth begins with the understanding that there needs to be a balance between the social and economic requirements of the country with the needs of the environment. This balance can be achieved if there is a deliberate and urgent move towards reforms in policy, legal and institutional arrangements, adopting integrated catchment management, promotion of sustainable water resources utilisation, strong support in IWRM institutional capacity building and strengthening of IWRM institutional coordination and implementation. The water resources challenges that the country faces can best be resolved with the uncompromising indulgence and cooperation of the government, the private sector, civil society organisations and Development Partners. The Country Water Partnership and the GWP – SA should continue spearheading IWRM and be assisted in taking further steps towards implementation of IWRM/WE projects. The global environmental and economic challenges and threats in the form of climate change and economic meltdown should be seen as an opportunity in taking concrete and urgent decisions towards Integrated Water Resources Management and not as catalysts of doom and gloom.

TABLE OF CONTENTS

CHAPTER 1: BACKGROUND AND CONTEXT

1.1 Project Background

Regional consultant and GWP to provide a common introductory paragraph

1.2 Geographic Context

Malawi is located in the south-eastern part of the African continent lying between latitudes 9°S and 17°S and between longitudes 33°E and 36°E. The country shares its borders with Mozambique to the south-east and south, Tanzania to the north and Zambia to the west. The country covers a total geographical area of 118,480 km^2 of which 28,760 km^2 or 20 per cent of it is covered by surface water resources dominated by Lake Malawi. The major physiographic regions of the country are the Nyika and Viphya plateaux in the north, the plains of the central region and the Shire Highlands in the south. Between these high plateau areas and the lakeshore zone below, lies the Escarpment Zone which is traversed by numerous rivers and streams. The predominantly mountainous country has its highest point on Sapitwa, on Mulanje Mountain which reaches 3,011 metres a.m.s.l.[1] About 93.2 per cent of the country lies wholly within the Zambezi Basin[2] with the remaining 6.8 per cent draining into Lake Chilwa or towards the Indian Ocean to the east.

The country's climate is influenced by the positioning of the Inter-Tropical Convergence Zone (ITCZ) and other major wind systems including the Congo Air and the South-Easterly winds. It enjoys a tropical sub-humid climate with the rains commencing in about October and ending in late April or early May. The mean annual rainfall is between 600 mm in the extreme south to over 3,200 mm in the extreme north. Relative humidity and evaporation are influenced by the dominance of wind systems and cloud cover. Drought is an overriding factor in the degradation of rangelands and cultivated areas and will continue to limit economic performance and exert pressure on the environment.[3] It has been projected that climate change will have disastrous impact on southern Africa [of which Malawi is part] having major influence on water availability, health, biodiversity, agriculture and food security, ecosystems and environmental migration[4]. For instance, the drought that hit Dedza, Dowa, Mzimba, Nkhotakota, Ntcheu and Salima in 1994 has been blamed on climate change[5].

The principal land-use areas in Malawi include arable land (20.7%) under customary tenure on which almost 80 per cent of the population dwells, state lands which include forest reserves (36.2%)[6], national parks (11.3%)[7], built-up areas and public areas such as roads. Private and leased land also forms other categories. Major environmental threats include deforestation, land degradation, water pollution from agricultural runoff, sewage, industrial wastes and siltation of spawning grounds that endangers fish populations.[8]

1.3 Social and Economic Context

Colonised and ruled by the British until early 1960s, the country gained its independence in 1964 and attained its Republican status in 1966. At this time, the total population was four million and has grown steadily over the past 45 years to over 13 million inhabitants. By 2008 Malawi's population stood at 13,931,831 of whom 46 per cent were between 0-14 years, 51.4 per cent were between 15-64 years and 2.6 per cent were over 56 years. The country's annual population growth rate was estimated to be 2.39 per cent per annum (2008 estimates) but growth has been complicated due to the HIV/AIDS pandemic. According to the Population and Housing Census conducted during the same year, there were 3,208,112 males between the ages of 0 – 14 with 3, 194, 600 females in the same age category. Those that fell in the age group of 15 – 64 were 3,592,073 males and 3,563,840 females. The age group of 65 years and above accounted for 159,450 males and 213,756 females. The largest concentration of the population is in the southern region of the country (45%) followed by the centre (42%) and the north (13%)[9]. The country's dependency ratio stands at 99 per cent[10].

Clear patterns of net rural-urban migration are vivid in the country as evidenced by the urban annual population growth rates. It has been established that the annual urban population growth rate is very high and rising, at 4.8 per cent in 1998 and about 6.7 per cent after 2000, making Malawi one of the most rapidly urbanising nations. The rapid growth of the urban population has been linked the tendency to extend urban boundaries to bring peri-urban areas within the purview of rateable areas. Recent estimates suggest a doubling of Malawi's urban population in just 15 years[11]. This net loss in rural population is likely to have an impact on agriculture which is the country's main economic base accounting for 35 per cent of GDP and employs over 80 per cent of the country's labour force. This sector is dominated by tobacco, maize, tea, cotton, coffee, groundnuts, cashew and other food and non-food crops. The GDP contribution by industry and services is 19 per cent and 45 per cent respectively[12].

The country is not as yet heavily industrialised but small to medium-sized industries exist in large numbers. Some of

the established industries include tobacco and tea processing, sugar, sawmill products, cement, beverages, manufacturing and consumer goods. The electricity of the country is 96.7 per cent hydroelectric and 3.3 per cent fossil fuels. Some of the electricity is exported to Mozambique and Zambia and is yet to connect to the Southern African Power Pool (SAPP). Beginning in 2006, the country began mixing unleaded petrol with 10 per cent ethanol, produced in-country at two plants, to reduce dependence on imported fuel. In 2008, Malawi began testing cars that ran solely on ethanol, and initial results are promising, and the country is continuing to increase its use of ethanol. Molasses produced during the manufacture of ethanol pose a great danger to water resources. As at 2008 the country was at an advanced stage in the exploration of precious and other valuable minerals which will fetch additional revenue for the country's economic development and growth. The planned Shire-Zambezi Waterway will open the country to the sea and transform it from a land-locked nation to that which can transport its goods to and from the outside world easily thereby reducing transportation costs which influence high commodity prices.

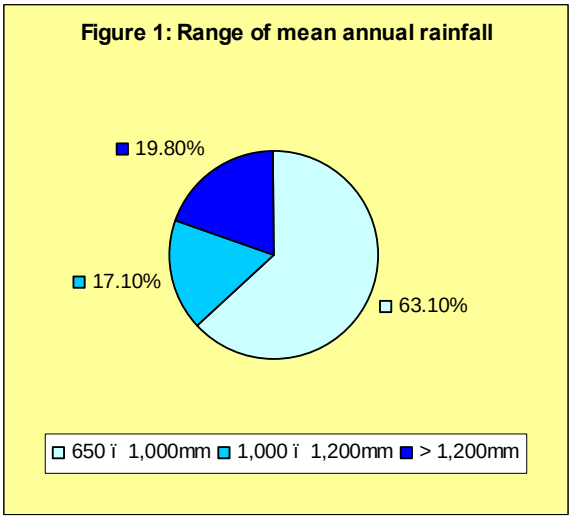
CHAPTER 2: WATER RESOURCES SITUATION

2.1 Water Availability and Infrastructure

Groundwater development in Malawi has primarily been for drinking water supply for both rural and urban areas. There are two types of aquifers in the country namely the extensive but low yielding weathered basement aquifer of the plateau area, and the high yielding alluvial aquifer of the lake shore plains and the Lower Shire Valley. The weathered zone is best developed over the plateau areas where it is commonly 15 - 30m thick and even thicker. The average yield in the weathered zone of the basement complex lies in the range of 1 - 2 litres per second. In the alluvial aquifers yields of up to more than 20 litres per second have been obtained. As of 2008, over 27,000 boreholes had been constructed.

The surface water resources of Malawi are predominantly defined by Lake Malawi and other smaller lakes such as Chilwa, Malombe and Chiuta as well as the numerous streams and rivers including the Shire that drains to the Zambezi. Although water resources are said to be generally and relatively abundant, they are increasingly threatened by a number of factors such as water scarcity, water resources degradation and pollution, over- exploitation and conflicts emerging out of lack of integrated water resources development and management, and rapid population growth.[13]

Figure 1: Range of mean annual rainfall



The annual rainfall distribution influences annual runoff in its rivers. Most rivers run dry by July, with the exception of those flowing from high altitude-rainfall areas of Nyika and Viphya plateaux, the Kirk Mountain Ranges, Zomba Plateau and Mulanje Mountain. This situation of unreliable dry season flows has been exacerbated by deforestation and poor land use practices. The degradation of catchment areas caused by population pressure, deforestation and poor agricultural practices have accelerated soil erosion and sedimentation or siltation problems in rivers and reservoirs[14]. In low-lying areas of the lakeshore such as Karonga, Salima, Nkhotakota, Bwanje Valley, and the Lower Shire Valley, communities have been subjected to frequent flooding with the resultant loss of animals and crops and sometimes, human life.

The quality of surface water resources has substantially deteriorated due to inappropriate land use practices, poor usage of agrochemicals and inappropriate disposal of domestic and industrial wastes and effluent. The government constructed a large number of gravity-fed rural water supply schemes in the 1970s which required minimal treatment facilities and relied heavily on the quality of the catchments. However, they are currently polluted by human waste due to encroachment in the protected areas. Non-designated waste disposal sites have sprouted up as a result of poor planning and technological inadequacies. Due to these standards, pollution and of the water resources of the country is manifested. Drought and flooding are recurrent problems in Malawi. The impact of climate change and variability strongly influences the occurrence and distribution of floods and droughts. The late start of the 2005/2006 rainfall season and inadequate rainfall during the season resulted in dwindling of water resources.[15] This was demonstrated by lower annual mean flows in rivers and low lake level which, for instance in October 2006 registered 474.19 a.m.s.l. compared to 474.35 a.m.s.l. in October, 2005 and 474.65 a.m.s.l. for October 2004.

2.2 Water Use, Demands and Requirements

Information on water use and demand is available in large quantities mainly kept by the Water Resources Board and the Regional Water Boards. However, this information kept by the Water Resources Board is in the form of rates of abstraction i.e. litre/day, from both surface and groundwater sources by individuals and industry including agriculture. The information is collected on the day of application for water right and upon granting approval, it is assume that, that volume per day will be abstracted and used for the purpose intended. However, the WRB does not verify these quantities to the extent that water users can abstract more quantities without the knowledge of the Board. This situation is as a result of the absence of monitoring. With respect to the rural areas, water use is mainly for domestic needs such as washing and cooking and water is principally supplied from boreholes and gravity-fed schemes estimated at 27 litres/person/day. A relatively small amount is abstracted for agricultural purposes using basic technologies in the form of treadle pumps. The total annual volume of water used for this purpose cannot also be ascertained by the water sector.

The only reliable data on water use and demand is kept by the Water Boards which are responsible for distribution of water to households and industries and have to estimate future demand based on urban population growth rates. For instance, The Northern Region Water Board has high quality information on water use and demand for all its towns of Chitipa, Karonga, Chilumba, Rumphi, Ekwendeni, Mzimba, Nkhata Bay, Chintheche and the City of Mzuzu and is able to make projections for water demand up to 2015. Similarly, the Central and Southern Region Water Boards keep up-to-date information on water use and demand for Kasungu, Mponela, Salima, Nkhotakota, Dedza, Dowa, Mchinji, Ntcheu and other smaller towns in the centre and Mangochi, Balaka, Zomba, Liwonde, Mwanza, Thyolo, Mulanje, Phalombe, Chikwawa, Nsanje and other smaller towns in the south, respectively.

Agriculture will continue to assume the leading role as the major water consumer in the country through irrigation in the major schemes of Lufilya, Wovwe, Hara, Limphasa, Kaombe, Bua, Bwanje, Nkhate, and the Illovo Sugar Estates of Nchalo and Dwangwa while more are planned and being opened up. Water supply will continue for sometime to take the second position while industry, the third[16]. Given adequate human resources and with some initiative, the Water Resources Board could also be able to analyse its information on water use and demand by basin as the information is already available. This analysis can provide definitive information on environmental requirements by basin especially due to water scarcity. Collation of data to estimate potential trends is also possible by basin even though this is limited to the Water Boards at the present. The current drive by the government to construction dams across the length and breadth of the country will assist in conserving water even though a deliberate water demand management policy needs to be implemented.

2.3 Key Water Resources Issues, Concerns and Priorities

Water governance in Malawi was until 1994 based on the Water Resources Act of 1969, the Water Works Act and other provisions scattered in various government ministries. This was followed by the preparation of another instrument[17] facilitated by the World Bank which elaborated on new policy and strategies to be followed until 2004. In 2005 a new National Water Policy was drafted and finalised which focuses on goals, objectives and guiding principles of the water sector and its related sub-sectors. The critical focus areas include water resources management and development, water quality and pollution control, water utilisation in the urban, peri-urban and market centres, rural water supply, agriculture, irrigation, navigation, fisheries, hydropower, forestry, disaster management, eco-tourism and recreation as well as monitoring and evaluation. The policy and its legislation further take into account the views of all other sectors and the SADC Regional Water Policy. However, human resources required to implement the policy and monitor compliance, remain inadequate at both the central and district levels whereas the governance of the water sector is much politicised.

The introduction of the decentralisation policy in the country has enabled the devolution of responsibilities in the water and other sectors to local authorities. However, only water supply is fully decentralised. Until the National Water Resources Authority and Catchment Management Authorities are established, decentralisation of water activities will still be regarded as centralised. The private sector such as tea estates as well as industries and religious organisations have also been heavily committed to water resources development and supply while the civil society groups such as Water Aid, Coordination Unit for the Rehabilitation of the Environment (CURE), Malawi Water Partnership (MWP), CEDRISA and others, have championed advocacy in sustainable water resources management.

As the country's population continues to grow and industrialisation increases, there will be more pressure on the water resources of the country. Poverty will be one of the major driving forces towards water resources scarcity due to catchment deterioration as a result of deforestation, cultivation, settlements and over-abstraction. This state will be compounded by the effects of climate change which have recently been more vivid than before as demonstrated by early cessation of rains and dwindling runoff. It has been projected that while Malawi is one of the water-stressed countries in the southern African region, it will be water scarce by 2025[18]. In spite of this observation, flooding could also be more pronounced over shorter periods due to climatic conditions. Although potential changes in intense rainfall frequency are difficult to infer from global climate models, largely because of coarse spatial resolution, there are indications[19] that the frequency of heavy rainfall events is likely to increase with global warming.

With the occurrence of increasing water scarcity, the country needs to put IWRM in place to avert further deterioration in water quality. Reduced runoff in rivers and streams will result in reduced dilution of wastes from industry, settlements, waste disposal sites and agricultural lands. In addition, the many rice and sugar irrigation schemes in the country will also be exposed to salinisation especially in areas of high temperatures and evaporation

such as the Shire valley and the lakeshore. In the event of increased flooding that would be induced by climate change, there is likely to be increased soil erosion and sedimentation, siltation of reservoirs and increased runoff which could have a negative impact on the groundwater resources as recharge of aquifers will be severely hampered. Flooding will also be detrimental to the health of communities as this increases incidences of malaria, cholera and other waterborne diseases coupled with the loss of life and property.

In dealing with these potential threats, the government has embarked on building dams for water conservation. These dams will assist in water harvesting during the rainy season and increase water supply for agriculture and other uses during the dry season. In the process, the reservoirs will also be point sources of groundwater recharge which could assist in triggering reappearance of springs and continued flow of rivers and streams throughout the seasons. Secondly, the government through its forestry department has also declared the rainy season the tree-planting period. Millions of trees are being planted every rainy season and it is expected that soil erosion, siltation and sedimentation will exceedingly reduce in the coming years. The incorporation and adoption of IWRM in the National Water Policy will facilitate sustainable management of water resources at all levels of society.

CHAPTER 3: ACTUAL STATE OF THE IWRM PROCESS

3.1 Policy and Legislation

The new National Water Policy completely divorces itself from the old and traditional form where it focussed on the water sector alone other than taking into account the needs of other sectors. It recognises the three E's of Integrated Water Resources Management by spearheading IWRM at the national and catchment levels. The policy provides in greater detail strategies for dealing with environmental water requirements, water quality, ecosystem maintenance, water allocation and use (which will be handled by the Water Resources Board), management of surface and groundwater resources, water-related infrastructure development, operation and maintenance, water pricing and financing for water programmes and projects, increasing public safety from floods and hydraulic structures, decentralisation, stakeholder participation and gender mainstreaming as well as monitoring and evaluation.

The policy draws its national legitimacy from the fact that it has been prepared with the full participation and involvement of all sectors of government, the private sector and the civil society organisations. All the sub-sectors that participated in the process of drafting the policy have resolved to work together in the implementation of IWRM-related projects. In doing this they have committed themselves to implementing their sectoral programmes in accordance with the principles of IWRM based on the understanding that they fully appreciate the benefits. Several key factors influenced the preparation of the National Water Policy and these included the fact that (a) several regional and international legal instruments had come into being and the existing national policy had come of age; (b) that there was divergence in focus between sectoral policies and were not in harmony with the water policy; (c) that the new water policy needed to be harmonised with the SADC Regional Water Policy and take cognisance of the provisions of the SADC Protocol on Shared Watercourse Systems; (d) that the new policy brings on board the government's key development priorities as spelt out in its Growth and Development Strategy and further recognises the aspirations of the Millennium Development Goals and those of NEPAD.

In doing this, the draft legislation was prepared by incorporating essential elements within the water and sanitation sector through a series of national consultative meetings on the challenges in the sector and outlining how these can be addressed. This policy and its legislation focus on goals, objectives and guiding principles of the water sector and its related sub-sectors. It provides modalities in dealing with water resources management and development, water quality and pollution control, water use in urban, peri-urban and market centres, rural water supply, water and agriculture irrigation, navigation, fisheries, hydropower generation and other uses. Effort has been made in addressing the needs of other sectors of the economy even though harmonisation between sectoral policies is yet to evolve with time.

As has been mentioned earlier, the new National Water Policy takes full cognisance of transboundary/international obligations which was basically the genesis of its formulation. There was need for harmonising the policy with the provisions of the SADC Protocol on Shared Watercourse Systems, SADC Regional Water Policy, and the Southern African Vision for Water, Life and Environment in the 21st Century and principles of IWRM.

3.2 Institutional Arrangements

Up until about 1980 water functions were the responsibility of not only one ministry but several which, included the Water Resources Division that was responsible for surface water resources, the Ministry of Local Government which was engaged in sanitation services and rural water supply as well as other players such as the private sector that also provided its own services in the water industry. With the formation of one ministry responsible for water, it became possible to put in place relevant policy and legislation that guided resource assessment and development and management. The ministry responsible for water has, for some time, been both the policy holder and the implementer of its own policy through development of water resources in the country. Currently, there are many institutions involved in the water sector ranging from government to Nongovernmental Organisations (NGOs) and Community-based Organisations (CBOs). The Ministry of Irrigation and Water Development (MoIWD) deals with policy at international, national, regional and local levels and resource assessment while the arm of water supply has been extended to Water Boards, NGOs and CBOs. The country has five statutory water utilities, two of which supply water to Blantyre and Lilongwe while the remaining three supply to other smaller urban and semi-urban areas. Development partners have been supportive in providing financial and technical support for the provision of potable water and management of water resources.

Since their formation, these water utilities have done exceedingly well in improving water supply to urban and semi-urban areas. However, emphasis has been on water supply and infrastructure development without giving due

consideration to water resources management. Nonetheless, efforts are currently been undertaken in catchment protection programmes and water conservation. One innovation that has also been introduced is the formation of Water User Associations that purchase bulk water from the utilities and sell to consumers at a profit, thereby offloading some of the responsibilities of the water utilities in the peri-urban areas. With drawn agreement between the two parties, water losses have also been minimised.

At the local level, District Assemblies are required to take on the responsibility of water resources management and supply. However, this arrangement would be implemented when the National Water Resources Authority (NWRA) and the Catchment Management Authorities (CMAs) have been established. The NWRA would be responsible for providing direction on water resources management and utilisation as well as allocation. This body will take form with the approval of Parliament and assert it role over water utilities and users throughout the country. At the basin level, each major basin would be under the general administration of a CMA which would among other functions, be responsible for the allocation of water at that level, including resource management. These two institutions will be supported by the ministry responsible for water affairs in the country and development partners. One critical challenge that the government is likely to face in the process of establishing these institutions though, is human resources and capacity, infrastructure, financial and technological resources and political will.

Financial support for water resources management and development as well as for water supply has been from at least two sources: government revenue and donor funds. The private sector including religious organisations which have played a leading role in the health and education sectors have also done commendable work in the area of water supply. With full development of water supply infrastructure, water is priced according to willingness to pay and affordability. The government has recognised that different communities within the society have different capacities in affordability to pay for water and has dictated to the water utilities what tariffs have to set. In many cases, tariffs may have a bearing on the source of financing of the project and the conditionality of the loan or grant which may take into account the interest rate, grant element, repayment period, repayment currency, repayment dates, commitment charges, predictability and the need for increase in untied aid to some level[20].

To a large extent water resources management and development in Malawi has principally been financed from external financial sources such as the World Bank, the African Development Bank, the European Union, CIDA, UNICEF, UNDP, OPEC Fund, Water Aid and others with a small part from local sources to provide for overheads. For instance, by 2008 the government of Malawi was to receive US$280 million for water resources and water supply development in the country under the National Water Development Programme II. These resources are meant to support water resources assessment and infrastructure development[21].

Charges for water resources management are set up by the Water Resources Board including charges for pollution of water courses. However, due to the fact that the Water Resources Act (1969) is almost obsolete, the charges for pollution may in many cases not be in conformity with the degree of the offence. In some cases, charges for the disposal of wastes into water courses are much less for the volumes that are discharged. This is because of the near absence of monitoring. With respect to waste disposal, government has passed over this responsibility to the private sector. In the urban areas, solid wastes are collected and disposed off by the City Assembly and charges are inbuilt into the city ground rentals which are payable every 6 months. This includes sewage from those areas that are connected to the city sewerage network. Those that depend on septic tanks, have to seek the services of private entrepreneurs who come to offload the waste at a rate dependent on the volume.

Through collaboration between the MoIWD and the Malawi Water Partnership there has been considerable progress in bringing awareness to the people in sustainable and integrated water resources management in the country. This drive has been achieved through a series of consultations involving Members of Parliament, Chiefs, Chief Executives of companies and parastatals, Principal Secretaries of government ministries and their Directors, Directors and officials of Nongovernmental Organisations and Community-based Organisations, the Academicians and others. The development of common focus and vision for water during these consultations has led to the full understanding of the benefits if integration and appreciation of their involvement in developing strategies for water resources management and development.

Water management is still a male-dominated enterprise in the country[22]. Women representation in the water sector is too low and decisions on water supply and sanitation technologies, location of water points and operation and maintenance systems are usually made by men. It has been found necessary to[23]:

- Develop Terms of Reference and hire a consultant to ensure gender mainstreaming while implementing the various projects under the National Water Development Programme II; and

- Build capacity at the district, local service providers and community level to effectively plan, design, construct and sustainably manage water supply and sanitation systems while addressing cross-cutting issues of gender and HIV/AIDS.

The present arrangement taken by the MoIWD is to further devolve responsibility of water supply to local communities who will be trained in infrastructure development and maintenance and management of water supply schemes. This will entail the formation of "mini Water Boards" at semi-urban centres which will operate all the local systems including financial management and make them independent. There will therefore be cohesion between the water service providers and the catchment councils once these are formed and are in place. Cooperation and collaboration will at this stage, have gone to the lowest level as possible.

3.3 Water Strategy and Instruments

The development of the IWRM/WE Plan for Malawi needed to focus on the Millennium Development Goals (MDGs), the Malawi Growth and Development Strategy (MGDS) and existing government policies and priorities. In doing this, it required a complete review of those elements that would either enhance or retard progress towards achieving the desired overall goals. With funding from the Canadian International Development Agency (CIDA), the Partnership for Africa's Water Development (PAWD) Project was established with the main objective of providing support to Malawi for preparing its national Integrated Water Resources Management and Water Efficiency Plans; providing support to institutional development of existing, new and emerging partnerships; and offering support to the integration of water into poverty reduction activities. The PAWD Project was considered important by the Malawi Government as it would facilitate the process of attaining the MDGs, and those of the MGDS.

The implementation of the PAWD Project came at a crucial stage due to a number of deficiencies that were there. The country was faced with a number of water-related challenges all of which cannot be enumerated here but principally, there was need to identify the critical factors leading to water resources degradation, legal and institutional arrangements, coerce the political leadership towards a new vision of integrated resource management and introduce and educate stakeholders about Integrated Water Resources Management. This required multi-stakeholder dialogue that would allow for a common understanding of the water resources gaps that existed to formulate management options, amid potential opportunities and challenges. The need for reforms as demonstrated by the preparation of the Water Policy, Water Act, and the process of establishing the National Water Authority (NWA), was a good cause for the PAWD Project to facilitate these processes. The water reform process was necessary as it had to harmonise the pronouncements of the MDGs and the MGDS on one hand with the views and aspirations of the citizenry. The high profile engagement of ministry officials especially from the water and finance sectors facilitated the smooth implementation of the project.

By the middle of 2008, Malawi had completed its Integrated Water Resources Management/Water Efficiency (IWRM/WE) Plan and was ready for printing and publishing. The Plan was handed over to the Government of Malawi through the ministry responsible for water affairs by the Malawi Water Partnership on July 29, 2008 in Lilongwe, witnessed by the Executive Secretary of GWP-SA and the Regional PAWD Project Manager. Immediately upon its submission to the government, the Ministry of Irrigation and Water Development prepared a Cabinet Paper which was subsequently submitted to Cabinet for adoption of the IWRM/WE Plan. The Steering Committee of the MWP (of which the Ministry of Irrigation and Water Development is a member), has requested that ministry to provide regular reminders to Cabinet for the adoption of the Plan.

The overall goal of the IWRM/WE Plan is "to achieve sustainable and integrated water resources development and management that make water readily available and equitably accessible to and used by all Malawians in pursuit of their human development and socio-economic advancement, and enhancement of the country's natural ecosystems". This goal will be achieved through a number of objectives which include the development of institutional capacity, improvement of water quality in the country's ecosystems, achievement of sustainable, commercially viable provision of water supply and sanitation services that are equitably accessed by individuals and entrepreneurs in urban, peri-urban and market centres for socio-economic development at affordable cost; achievement of sustainable provision of community-owned and managed water supply and sanitation services that are equitably accessed by individuals and entrepreneurs in rural communities at affordable cost; promotion of efficient and effective utilisation and conservation of water resources for sustainable agricultural development in

relation to the relevant policies; development and management of navigation, fisheries, hydropower and eco-tourism infrastructure, so as not to adversely affect water resources; promotion of the forestry sector in water resources catchment protection, conservation and management; and establishment of preparedness and contingency plans for water-related disasters and emergencies as an integral part of water resources management. These objectives provide solutions in dealing with the challenges that face the water sector and the overall national development goals. From the objectives, the Plan provides a number of proposed projects that wait in readiness for financial support from development partners.

A cross-section of stakeholders discussing the IWRM/WE Plan at Ryalls in Blantyre

The process and development of the IWRM/WE Plan closely followed the IWRM planning cycle. As an initial stage, it was necessary to introduce the IWRM principles and aims and objectives of the PAWD Project to the public and private sector. It was crucial at this early stage to garner support at the national level in order to contextualise the three PAWD project components and allow the government take a leading role in defining the agenda in terms of the programmes in place and those that would be required. As a deliberate strategy towards amassing support, a series of separate workshops on IWRM were arranged for Principal Secretaries, Directors of government departments and chief executives, the media, academicians, members of parliament and other stakeholders. At one such workshop for instance a total of 29 Principal Secretaries out of an expected number of 33 were present. These workshops were a success because invitations to these key officials were routed through the Chief Secretary in the Office of the President and Cabinet who took it upon himself to invite them as he was to preside.

These workshops continuously solicited support from stakeholders to make the process and the Plan collectively owned. In identifying the challenges facing the water sector, stakeholders were responsible for prioritising five out of the 13 challenges identified by the MoIWD seen as critical in the management and development of water resources in the country. These five priority challenges were:

- Poor catchment management;
- Inadequate water supply and sanitation;
- Inadequate stakeholder coordination;
- Unharmonised policies and laws; and
- Capacity building.

In pursuance of achieving the desired output and outcome, the process took several steps that involved building commitment among stakeholders, carrying out gap analysis, developing appropriate strategies and action plans, developing an implementation plan and devising a suitable monitoring and evaluation process of the Plan. Under these broad stages, there were a number of critical factors which catalysed and accelerated the preparation of the IWRM/WE Plan. These included:

- Analysis of existing policy gaps, present state of water infrastructure, institutional arrangements especially at the local level, water demand and use and human, financial and technological resources presently available and required in future;
- Undertaking consultative meetings, literature reviews, interviews, inclusion of prevailing knowledge on gaps and experiences by various stakeholders;
- Inclusiveness and full participation of a wide cross-section of stakeholders;
- Good relations and close collaboration between the Malawi Water Partnership and the officials of the Ministry of Irrigation and Water Development;
- Support received from GWP-SA and the GWP Reference Group; and
- Availability of financial resources.

The implementation of the Plan once adopted by Cabinet is expected to be easy due to the acceptance of its goals

and objectives by the many stakeholders that were involved and participated in its preparation. It has also stimulated government to review its sectoral policies so as to remove ambiguities and conflicts among them especially those that relate to water. Since the Office of the President and Cabinet (OPC) chaired some of the consultative sessions and as it houses a unit responsible for policy harmonisation, the process of converging sectoral responsibilities in areas that affect water will be much simplified. The road towards implementation of the development priorities that have been spelt out in the IWRM/WE Plan will therefore be smooth. These projects, it is believed, will assist in the promotion of IWRM as they become replicated in all the regions of the country thereby manifesting the realities of its principles as they affect the national development priorities, policies and strategies.

3.4 Practice (Implementation) of IWRM

The preparation of the IWRM/WE Plan has resulted in the full appreciation of IWRM principles and the direct benefits on the ground through the many consultative meetings held with stakeholders at all levels. The IWRM Plan and the Malawi Water Partnership's Strategic Plan (2008-2012) clearly outline the strategic objectives under each of the projects that have to be implemented after financial resources are identified. These projects which have been presented in the form of Concept Notes (PCNs) bring on board five (5) thematic areas which have to be addressed. These are:

- Enabling Environment;
- Integrated Catchment Management;
- Water Supply and Sanitation;
- Institutional Capacity Building; and
- Institutional Coordination and Plan Implementation.

The MWP's Strategic Plan (2008 – 2012) clearly stipulates what actions should be taken to sustain the Partnership and to advance the IWRM agenda, responsibilities, as well as resources that will be required.

With respect to funding, each Project Concept Note would have to be sold to an interested development partner at which stage a full project proposal would then be prepared together with a realistic budget for the activities to be carried out. As at 2009, the financing requirements were not as yet in place, first and foremost because the Plan has to be adopted by Cabinet and officially launched. However, government, through the Ministry of Irrigation and Water Development has made a strong commitment to support the implementation of the Plan's activities by providing some financial resources through its local financing arrangements. The Malawi Water Partnership has also committed itself to preparing bankable project proposals from the PCNs contained in the Plan so that some of the proposed projects can begin to be implemented.

A strong awareness programme was put in place throughout the period of preparing the Plan, which took the form of literature, advertising, audio and visual aids. Fact sheets were prepared on various thematic areas with a focus on IWRM and Water Efficiency and these were disseminated to various stakeholders such as secondary schools, District Assemblies, public and private organisations and tertiary educational institutions. Similarly, an IWRM Newsletter was also produced every quarter containing various articles on IWRM-related issues and distributed to the same recipients. Umbrellas and other pieces of convenience with IWRM messages on them went further to "advertise" IWRM in the country which were supported by IWRM/WE programmes in the papers, on radio and television. As a way forward, the IWRM/WE Plan and the CWP's Strategic Plan has dully allowed for awareness promotional campaigns, including capacity building, and gender mainstreaming, as well as HIV/AIDS promotional endeavours. Specific budget requirements have been indicated for the same.

The inclusion of the IWRM/WE overall goal and its strategic focus in the New Water Policy by the MoIWD sets new ground as to how all water-related activities by other government sectors and the private sector are to be implemented. With the intended formation of the National Water Authority (NWA), it is expected that it will ably administer and coordinate coherent programmes in water resources development and management at both the national and international levels.

Capacity building and institutional arrangements are the principle obstacles that are currently hindering progress towards an effective system of registering and/or assessing water use by sector and effectively managing water rights and licensing. In order to turn around this challenge, it is desired that the Water Resources Board be a fully-fledged unit with adequate human and other resources to regularly monitor progress in the management of water resources. Unfortunately, up until 2009, the Water Resources Board is essentially a rudimentary unit within the

MoIWD with skeletal staff and unable to adequately access water users in both the urban and rural areas. The NWA therefore, is seen to be the way forward in addressing this serious challenge once formed and operational. Similarly, only until the IWRM/WE Plan is adopted by Cabinet will there be realistic progress on adhering to integrated water allocation or water quality management plans at a catchment level. This will be reinforced by the formation of Catchment Councils or Catchment Authorities who can liaise and collaborate with the NWA and the MoIWD in the governance of water at that level. Water governance at the catchment level would therefore involve among other issues, water resources management and development, infrastructure development (by sectors), conservation, allocation, use, pricing, monitoring and evaluation.

As pointed out in Section 2.3 of this report, the governance of the water sector is much politicised just as is the development of water resources. Due to the high demand for water especially for domestic and agricultural use in the rural areas, there has been a rapid increase in the drilling of boreholes and rehabilitation of old earth dams and construction of new ones. While the drilling of new boreholes has to a greater extent been extended to private drilling contractors with little, if any, knowledge of hydrogeology, it has turns out that some of the boreholes have dried up so quickly especially in poor aquifers. There are also other areas with a high density of boreholes with good yields which however pose the danger of over-abstraction of groundwater resources. With respect to dams, the high demand for water conservation structures may influence the government to construct these hydraulic structures with undue speed thereby compromising standards and putting communities downstream at risk of possible flooding in the event of any dam failure. In addition, it is also not clear if environmental considerations have adequately been taken into account as regards environmental flows and water supply needs of communities living on the downstream side of the new dams.

The introduction of the tree-planting period introduced by the government is a clear realisation of the dangers that the water resources of the country face as catchments continue to undergo deforestation. The forestry department has gone a long way in sensitising local communities in planting trees in order to rehabilitate catchments. City and District Assemblies have also responded favourably in controlling waste disposal just as has the Department of Agriculture in reversing its policy which allowed for cultivation on steep slopes and along river banks. Water utilities are also taking catchment protection as one of their mainstream activities apart from engaging Water Users Associations in water supply and water resources management activities.

3.5 Monitoring and Evaluation

The Government of Malawi through its Ministry of Irrigation and Water Development has put monitoring and Evaluation as one important tool in assessing progress of programmes and projects in the country. Currently, monitoring and evaluation has been achieved through the holding of joint reviews with Non-state actors and Development Partners through the sector-wide approach (SWAp). The government is keen to see that there is better performance in all areas of development. Monitoring and evaluation is therefore part of the planning stages of each project cycle such as design, implementation, management, rehabilitation and maintenance. In its second National Water Development Programme, monitoring and evaluation takes a stand alone status as an overarching activity to oversee the progress being achieved in other projects.

Performance-based indicators will be used in monitoring and evaluating progress in each project especially by the water utilities. Critical change areas will be legislation, such as the Water Act, improved water resources investment planning and improved lake level control for energy production in the country. A sector-wide approach is being utilised to consider sector management, institutional framework for urban water supply and improved hygiene and sanitation. While the Ministry of Economic Planning and Development (MEPD) is responsible for Monitoring and Evaluation in all sectors, there is need for a direct linkage with the new system. The current observation is that the government has often been quick at preparing projects and Monitoring and Evaluation has often come much later in the project implementation cycle. There is a new realisation that this approach needs to change. The major goal of Monitoring and Evaluation will be the realisation of effectiveness of each project and programme so that it is able to deliver the outputs and outcomes for which it was intended.

CHAPTER 4: ACTUAL STATE OF WATER ACCOUNTING

4.1 Reliability of the Water Use Information

Documentation of information on the availability, reliability, consistency and accessibility of water use has been separately made available by Macy (1999)[24] and Mulwafu et al (2002)[25]. According to water supply studies carried out for the urban centres of Southern Africa the City of Blantyre had a total of 29 000 metered connections in 1997 and the water demand and use categories are were as follows[26]:

Table 1: Annual water demand and use in Blantyre in 1997

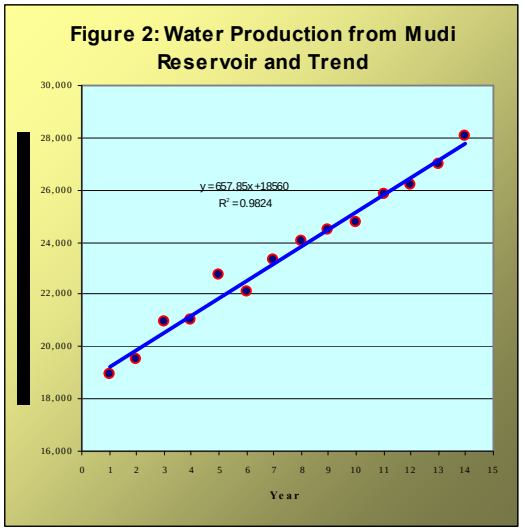
Category	Demand (cu. m x10^6)
High Density Traditional Areas	2 695
High Density Permanent Areas	1 432
Low Density Areas	6 545
Government/Public	4 500
Schools/Colleges	1 023
Industry/Commerce	4 295

Production figures from Mudi reservoir (secondary source of water supply to the city) for the period 1990-2003 indicate a general rise in demand as seen in Figure 2 below. Using the year 1990 as Year 1, projections for water demand from the Mudi River can easily be made. For instance, it can be expected that Mudi will need to supply about 35 664 100 m^3/day by the year 2015[27]. Information on water use in other cities and urban centres including resource availability is regarded as adequate and has been used in recent studies[28]

Following Macy's footpath, a comprehensive study was undertaken in 2002 on water demand management (WDM) in the country through interviews with the Ministry responsible for water affairs, the Environmental Affairs Department, District Assemblies, Ministry of Agriculture and Irrigation, and the Ministry of Commerce & Industry[29]. The objective of this survey was to establish the total demand for water in Malawi; WDM legislation, policies and strategies; internal capacity for implementing WDM; measures for promoting WDM awareness; application of WDM at the regional level; and the main constraints to WDM in the country. This study revealed that by 2002 while the Ministry responsible for water affairs and the Department of Environmental Affairs had their enabling legislation mention WDM, the corresponding policies and strategies did not give prominence to it. Complicating the matter further, it was accepted by those two institutions that there is often duplication of functions between them especially with respect to issuance of water licenses and control of water pollution. This often leads to clients not being sure which of the two institutions to approach. Other institutions dealing with water supply and sanitation revealed the following:

Department of Water Supply: There is inadequate water demand management especially in the rural areas where water supply is through boreholes and gravity-fed water supply schemes. Since these water facilities are used by rural communities, no monitoring is made on water use and efficiency to the extent that there are unwarranted losses when the supply chain is broken especially in the gravity-fed water supply schemes. The Water Resources Board does not have any information on water use efficiency of individuals and institutions it has granted water supply grants and licenses. It has been accepted by relevant government that there is lack of internal capacity to gather information on water use and management while there is also a related institutional weakness - absence of a planning unit in the Ministry of Water Development[30].

Regional Water Boards: The Regional Water Boards inherited very old and inefficient water supply facilities from the District Water Supply Fund under the Ministry responsible for water affairs. Consequently high pressures cause pipes to burst leading to water losses that are not accounted for including leakages. Faulty meters and illegal water connections compound the problem further. Water losses are further experienced in public institutions where there are no incentives among the individuals concerned to minimize the use of water or to minimize water leakage by replacing faulty water appliances since they are not responsible for water bills but the institution. In the urban areas served by these Water Boards, the average amount of water lost or not accounted for ranges from 20 per cent to about 30 per cent of the total amount supplied while losses of up to 51 per cent have been reported by some Water Boards[31]. Nonetheless, there has been improvement in information collection lately on water use and management



in all the Water Boards which is also generally reliable[32].

Nongovernmental Organisations: These have often concentrated on developing water supply infrastructure and have not made any effort to allocate part of their effort to water use and resource management. The only information that can be obtained is on the construction details of boreholes and gravity-fed water supply schemes and the number of people served.

A borehole along the road at Liwonde Town, that looks to have been drilled and finished in a hurry. Relevant construction data may be missing under these circumstances.

Industry: Information on industrial water use indicates that while these are private sector consumers, they pay for water individually and conserve water to maximize their profits. In the case of the Southern Bottlers Limited (manufacturers of beverages and the largest water consumer in the City of Blantyre) for instance, they recycle water. At its peak the average amount of water used is 12,000 cubic meters per month. When demand is low, the average amount of water used is 7,000 cubic meters per month. The current capacity for recycling water is 75,000 cubic metres per month which allows it to save one-third of the monthly water bills.

Agriculture: It has been established that water is wasted through inappropriate methods of irrigating smallholder agricultural land. Often over-irrigating occurs, with furrows being filled with water until the ridges are submerged. The absence of water pricing has led to smallholder farmers not to conserve water. The irrigation policy makes it very clear about the need to use water efficiently. Yet one of the largest commercial estates in the country, Illovo, hardly practices any Water Demand Management[33].

Catchment areas: Up to about 1995, Malawi had one of the best hydrometric networks in southern Africa and a lot of effort was made in data collection, processing, analysis and storage[34]. Until this time data on stream flows, groundwater, rainfall and gauging station network and other related information was regarded authentic following the completion of an earlier project[35]. However, while historical data has now been computerised and is regarded adequate, the state of the hydrometric and hydrometeorological network if far from satisfactory due to the lack of maintenance resulting in low-quality data[36].

Water supply and sanitation: Since the establishment of the Regional Water Boards, there has been general improvement in the management of information on water availability use and management. The basic reason behind this state of affairs is because they have to maintain quality data which is important for making demand projections. The information from these water utilities is readily available and can be regarded reliable, consistent and accessible. However, caution needs to be taken for those schemes under the jurisdiction of the Water Supply Branch of the Ministry of Irrigation and Water Development and those that have been handed over to communities to run by Nongovernmental Organisations.

Raw/bulk water: Abstraction volumes by water utilities are available including those quantities that are sold to Water Users Associations (WUAs) since these are metered. This information can be regarded as reliable as the traded volumes are based on profit margins between the water utilities and the WUAs.

Projections:
There are at least two aspects that will influence data reliability, accessibility and consistency. First, unless the government refrains from politicizing water development issues, there is a possibility that there will be rapid water development programmes that will outpace the capability and capacity of the ministry responsible for water affairs to collect and process the required information. This situation could be made worse when private contractors are engaged to undertake various works without adequately collaborating with the parent ministry. Secondly, the government needs to strengthen the present effort in maintaining hydrometric and hydrometeorological stations with financial resources sourced from development partners or from its own coffers. Ignoring these recommendations will leave the country to have one of the worse databases on water resources.

4.2 Allocation of Water

Water allocation in Malawi is the responsibility of the Water Resources Board, a unit of the Ministry of Irrigation and Water Development. An individual or and institution makes an application to the Board indicating what purpose the water will be used for and what amounts are required per day. The Board makes an assessment of all applications received and further analyses the total withdraws from applicable catchments to assess whether such new applications should be approved or not. Based on hydrological information and depending on the availability of water in the catchments in which the applications apply, the Board may or may not grant a water right for abstraction. If a particular catchment does not have adequate water resources, a variation in the amount applied for may be recommended before granting approval for abstraction. The granting of a water right to abstract water from a particular watercourse system or a licence to discharge waste or effluent into any such a system is governed by the subsisting legislation[37] which is now long overdue for revision.

While the Hydrology Division kept up-to-date hydrological data in the previous decades gone by, it is now not very clear if present water allocations are based on realistic information on the amount of available water resources in river systems. This is because of the poor state in which the hydrometric network is and that no regular discharge measurements are taken as they were before. Currently, the National Water Policy has allocated a minimum of 8 per cent of water to the environment. This is much lower an allocation than provisions made by other African countries such as Kenya and South Africa who have allocated 30 percent for environmental flows[38]. With the current poor state of hydrological records, over-abstraction of water from river systems may mean that the amount allocated for the environment is therefore much less than 8 per cent.

While it is the wish of the Water Resources Board that existing holders of water rights and allocations adhere to them and that these rights are not adversely affected by illegal water abstractions by others, it is not able to verify compliance due to limited human and technological resources. Monitoring of abstraction by individuals and institutions is hardly undertaken and inspections may only be made when there are conflicts between adjacent water users.

The IWRM/WE Plan has recognised this shortcoming and proposes that all stakeholders should participate in water resources development and allocation decisions, conflict resolution and trade-off choices[39]. The declining water situation could now become the major limiting factor towards socio-economic development in the country. Water allocation among competing potential users will be critical and trade-offs will have to be made in order to ensure that the scarce water resources are used in activities that will result in maximising benefits for the country[40].

4.3 Water Pricing and Tariffs

The pricing of water is essentially based on a number of factors which include the following:

- The purpose for which the water is to be used;
- Affordability to pay for water;
- Willingness to pay for water; and
- Social and cultural services.

Purpose: Where water is to be used for industrial purposes, the full economic value of water is taken into account as it is to generate profit for that industry. In addition, it is also recognised that there is capacity by that industry to pay for the amount of water applied for. It is up to that industry to make the full economic value of the resource by maximising its use such as through recycling as has been stated in Section 4.1 of this report. In this regard, pricing of water for agriculture, manufacturing, power generation and bulk water for supply by the Water Boards is based on their capacity to pay and the profits they generate. Apart from the purpose, the pricing of water also depends on the volumes of abstraction. The Water Resources Board will assign a particular price category to an institution such as the Electricity Supply Corporation of Malawi (ESCOM) by considering what proportion of the available water resource is abstracted from the source. Similarly, the Blantyre Water Board will pay for its abstraction from the Shire River depending on the volume of abstraction which is dictated by the demand for water in the city. It should therefore be noted here that the costs of power generation by ESCOM or the charges of abstraction by the water utilities are directly transferred to the power and water consumers, respectively, if the utilities are to be profitable.

The tariffs set for consumers reflect what profit margins the utilities want to achieve. Tariffs may also be a direct result of dictates from a development partner where a new water development project has been financed by it. The desire will be to recover the capital investment expenditure within the shortest period possible. In doing so, water

utilities will submit to government, through the Ministry of Irrigation and Water Development recommended water tariffs for its approval. In the case of the power utility, such recommendations for tariff adjustment may be submitted to government through the Department of Energy. Approval of these submissions takes into account affordability by various sections of the society to pay for water, recovery rate of the capital investment value, social functions of water and political implications.

Affordability to pay for water: While more than 80 per cent of the country's population resides in the rural areas, government has been obliged to increase accessibility to clean potable water to these communities in line with the aspirations of the Millennium Development Goals and NEPAD. Even before the International Drinking Water and Sanitation Decade of the 1980s came into force, the Government of Malawi was already taking steps towards improvement of water supply and sanitation in both the urban and rural areas. This effort was to be supported and supplemented by Nongovernmental Organisations and development partners. However, the development of water supply far surpassed that of sanitation due to lack of explicit policy on sanitation and general interest by Nongovernmental Organisations.

Water resources development and water supply in the rural areas has been in the form of boreholes and rural water supply gravity-fed schemes. By virtue of the fact that the majority of the rural population is poor and that water in these two sources does not undergo purification (and that therefore there are no costs), no charges have been made for accessing potable water from these sources. Instead, realising that there is need for periodic maintenance of the boreholes and the gravity-fed schemes, the communities were trained in what became to be famously known as Village Level Operation and Maintenance (VLOM). Communities have therefore paid for their water in kind through the maintenance of the infrastructure of the respective water facilities.

In the case of urban areas, water pricing also considers social groupings. There essentially four levels of social grouping which are:

(a) Low Density Areas;
(b) Middle Density Areas;
(c) High Density Areas; and
(d) Traditional Housing Areas.

Water tariffs are normally high depending on the area one resides in. Pricing is also staggered – a particular charge will apply for a certain amount of consumption while another extra charge is paid if consumption goes beyond that normal amount. The charging is therefore incremental depending on total consumption per month. This rating applies to the Low, Middle and High Density communities but does not apply to the other group. In the case of those residing in traditional housing areas, water pricing is fixed. These supposedly low-income earners pay a fixed amount of cash for a pail of water from designated water kiosks which have now been taken over by the Water Users Associations from the Water Boards.

Willingness to pay for water: Willingness to pay for water is based on pure economic principles of supply and demand. The available options of "buying" water which is regarded safe and obtaining water from other sources such as dugout wells come into play.

Social and cultural services: While water has an economic value, it also has social and cultural functions. In this regard, due consideration is made by government in setting tariffs for water from time to time.

In all cases, both the government through its Ministry of Irrigation and Water Development and the Water Boards maintain records of water tariffs agreed upon by both parties and these are available for inspection by a third party.

4.4 Economic Data

The responsibility of economic performance of each sector of the economy rests with the Department of Economic Planning and Development (EP&D). The Department periodically makes assessments of economic performance of the various sectors of the economy both public and private in order to determine developmental trends. The National Statistical Office (NSO) also plays a vital role in compiling this information which is accessed by interested groups for various purposes. The information is in the form of bulletins or electronic, usually supplied on its Website. The regularity at which these assessments are made makes the information credible and reliable for use. Usually the EP&D will provide regular updates on economic data usually at quarterly intervals in its quest to apprise the public

on economic performance of the country. Malawi has been one of the countries win southern Africa that have scored an annual economic growth rate of more than 8 per cent, lagging behind only after Angola.

The just-ended national survey fully documented by the National Statistical Office[41] adds value to assessing economic and social services in the country that contribute to its Gross Domestic Product (GDP) and the general levels of economic development and growth. The increase in the country's population from 11,407,000 in 1998[42] to 13,931,831 in 2008[43] implies that there is need for more investment in order to satisfy social and economic needs of the population in which case water will be at the centre of such economic and social development and growth.

4.5 Economic Water Accounts

As stated in Sections 2.2 and 4.1 of this report, there is general consistency in data collection and processing by the Water Boards basically because these data act as future benchmarks for system development and improvement. In the case of the Blantyre and Lilongwe Water Boards for instance, there is adequate and reliable data on amounts of water abstracted from its principal sources, Shire and the Mudi Reservoir, total capacity of abstraction, the net asset base, annual turnover, customer base, population, size of supply area and establishment[44] as seen in Table 2 below. The Blantyre Water Board gets 90 per cent of its bulk water supply from the Shire River with the remaining 10 per cent from the Mudi while Lilongwe Water Board abstracts its water from one source – Lilongwe River.

Table 2: Some statistics for BWB and LWB

Parameter	BWB	LWB
Net Asset Base	MK3.2 billion	MK2.0 billion
Annual Turnover	MK0.92 billion	MK1.2 billion
Customer Base	42, 000 customers	25, 000 customers
Population	0.8 million	0.7 million
Size of Supply Area	800 km^2	400 km^2
Establishment	450	442

In order to meet consumer expectations and economic sustainability, the two Water Boards, just like the other three, Northern, Central and Southern, keep up-to-date information on their corporate assets and resources. Apart from what has been indicated in Table 2, the Water Boards also have reliable records of water production rates, daily water demand, peak daily demand volumes, total coverage and hours of supply (see Table 3). The daily demand is compared with the capacity of raw water abstraction rates and where demand becomes greater than what the plants can produce, new investment is needed to improve supply. For the City of Blantyre it has been projected that the present plants are able to satisfy demand only up to the year 2010 while the capacities for the City of Lilongwe have already been surpassed by demand (see Table 4).

Table 3: Treatment Capacities and Water Demand

Parameter	BWB	LWB
Treatment (Plant I)	78, 000 m^3/day	35, 000 m^3/day
Treatment (Plant II)	8, 000 m^3/day	60, 000 m^3/day
Av. Daily demand	80, 000 m^3/day	75, 000 m^3/day
Peak Demand	95, 000 m^3/day	80, 000 m^3/day
Coverage (2007)	80%	72%
Hours of Supply	Varies	24

While the two Water Boards continue to strive in providing water to the residents of the Cities of Blantyre and Lilongwe, they are faced with a number of challenges. These challenges include:

- To supply adequate potable water 24 hours everyday to meet the demand;
- Diminishing raw water resources due to siltation of sources;
- Rising operating costs due to ever-increasing cost of inputs such as power, chemicals, labour, spares, etc;
- Culture of non-payment for services;
- High debt burden due to outstanding loans;
- Tariff rates mostly being much less than full capital and operating cost recovery rates;
- Lack of adequate financing for major capital investment projects and rehabilitation, upgrading and extension of plants and systems;
- Aging and poor state of infrastructure leading to high system losses and high operating costs; and
- Increasing water demand due to:
  - Population growth of about 6 per cent per annum; and
  - Socio-economic developments within the cities and their conurbations.

Table 4: Raw Water Capacities

Parameter	BWB	LWB
Source I	180,000m^3/day *	4.5 million m^3 (Dam 1)
Source II	1.8 x 106 m^3 (Mudi)	19.8 x 106 m^3 (Dam 2)
Adequacy	Up to 2010	Up to 2008
Catchment	L. Malawi/Shire River	1,870 km^3

It has been projected that the population of Blantyre will reach 1,435,000 by the year 2025 while that of Lilongwe will rise to 1,238,500 people[45]. This increase will consist of migrants from the rural areas in search of job opportunities

and influenced by the pull of the cities and are expected to reside in low-income traditional housing areas where provision of water supply services is unplanned. In addition to this challenge, the cities could experience high non-revenue water losses due to system losses, metering and billing which calls for new planning and investment. New investment is needed for improving commercial performance and institutional accounts receivables; Rehabilitation of catchment areas; controlling cultivation within catchment areas of supply and improving crop husbandry practices; recruitment and training of professionals; controlling the proliferation of boreholes which endanger the quality of water supply and loss of revenue and providing assistance to HIV/AIDS affected and infected personnel.

Table 5: EU/EIB-Funded Investment Projects (€Million)

Activity	BWB	LWB	Total
Production improvement	6.83	5.28	12.11
NRW reduction	3.59	1.10	4.69
WSS to LIAs	3.95	2.90	6.85
Total	**14.37**	**9.28**	**23.65**

To avert decline in system performance and service delivery, records indicate that a total of €23.65 million has been provided by the European Investment Bank which will be used to finance improvement in production, reduction in losses and water supply and sanitation to low-income areas (see Table 5). An additional €30.8 million will also be allocated to the water supply and sanitation sector for recruitment of personnel, service contract, improvement of water infrastructure, facilitation, overheads and running costs (see Table 6).

Table 6: Overall Budget for Improvement of Service Delivery

Description	Amount (€Million)
Procurement Advisor	0.300
Service Contract	6.000
Works Contracts - BWB	14.37
Works Contract - LWB	9.280
HIV/AIDS programme	0.200
Facilitation of WSS to LIAs	0.500
PIU running cost	0.250
TOTAL	**30.80**
Note: LIAs stands for Low-Income Areas	

This injection of financial resources into the water supply and sanitation sector demands an effective and efficient collection, processing and analysis of water economic accounts which are essential for the maintenance of an improved system delivery service in all the five Water Boards, Blantyre, Lilongwe, Northern, Central and Southern. Essential information such as bulk water abstractions, volumes of purified water, costs and quantities of chemicals used in water purification, number of current metered connections, projected new connections, revenues from metered connections and kiosks, water losses, debts, operational costs and overheads will need to be consistent in order to facilitate the evaluation of system performance.

Table 7: Expected Service Delivery Improvement

Activity	BWB	LWB
Production	11 500 m^3/day	10 500 m^3/day
NRW reduction	51% to 34%	35% to 26%
Increment of water	21 456 m^3/day	12 974 m^3/day
Serving LIAs	93 013 households; 465 065 people.	72 188 households; 360 940 people.
Efficiency	24 hours of supply	24 hours supply
Financial sustainability	Revenue collection improved; Meet operational costs and service debts.	Revenue collection improved; Meet operational costs and service debts.

With this financial injection provided through the National Water Development Programme which will total close to $280 million, it is expected that the Blantyre Water Board will increase its daily water production by 11, 500 cubic metres while that for the City of Lilongwe will increase by 10, 500 cubic metres. Non-revenue water reduction will move from the present 51 per cent to 34 per cent for the City of Blantyre while that for the City of Lilongwe will move from the current 35 per cent to 26 per cent. Further improvements include increased water supply of 21, 456 cubic metres per day for the City of Blantyre and 12, 974 cubic metres per day for the City of Lilongwe; new water connections for 93, 013 and 72, 188 households in the cities of Blantyre and Lilongwe respectively and improved revenue collection to service debts and meet operational costs. There will also be a guaranteed water supply of 24 hours (see Table 7).

CHAPTER 5: FUTURE PERSPECTIVES

This chapter summarises the key issues of the IWRM/WE planning process in Malawi by reviewing the challenges and successes encountered along the way and sets these issues as a benchmark for the continuation and strengthening of the IWRM/WE process in the short- and long-term. It examines the key lessons learnt through the process and makes recommendations for the continuation of this important national as well as regional initiative. Constraints, opportunities and future perspectives close the door of the chapter and this report.

5.1 Key Lessons from the Country Experience

Malawi's natural resources in the form of rich soils, forest reserves, wildlife, water and its population makes it one of the potentially wealthy nations in Sub-Saharan Africa in general and the SADC region in particular. The extreme beauty of the yet to be fully exploited plateaux of Viphya, Nyika, the Kirk ranges and the Mulanje Mountain coupled with the rolling plains of the central region and the splendour of Lake Malawi offer great potential for sustainable socio-economic development and growth. These qualities offer the country the opportunity to transform itself to greater heights through concerted efforts by all stakeholders.

Although regarded to have vast water resources, global warming and climate change are likely to impact adversely on the country's water resources which could subsequently trigger more pressures on its development agenda. With growth in population, urbanisation and industrialisation, the demand for water is expected to increase thereby putting the finite resource in greater peril than now. In the absence of consultative approach in water resources development and management, there would be continued wastage in water use, more land degradation, soil erosion, and water pollution through pesticides, herbicides, effluents, oils and solid wastes and deterioration of water resources infrastructure against a background of increasing demand for water resources. While the Government of Malawi through its Growth and Development Strategy (MGDS) has established key priorities among priorities in its quest to achieve socio-economic development and growth and attain the Millennium Development Goals and those of NEPARD, the strengthening of Integrated Water Resources Management and Water Efficiency provides an excellent opportunity towards achieving is national and regional aspirations.

In order to achieve the intended goals and its development objectives the country requires, as a matter of urgency, to harmonise its sectoral policies especially those that relate to water by bringing on board Integrated Water Resources management and Water Efficiency. Integrated Water Resources management and Water Efficiency planning process in Malawi has shown that there are a number of deficiencies which include slow coordination of policies which are also carried out at different paces; influencing change needs to have practical demonstration in order for stakeholders to appreciate the benefits of IWRM; institutional arrangements for the IWRM/WE process requires strengthening; and that the government through the ministry responsible for water affairs should put more effort in accelerating the pace for IWRM/WE approval, adoption and institutionalisation.

Success in sustainable water resources management on which socio-economic development and growth are hinged, will be achieved if there is a vigorous campaign in spreading the message of IWRM/WE in the country through both audio and visual aids as well as practical projects throughout the landscape especially when the country now intends to introduce its "Green Belt" along the lakeshore from Karonga in the north to Nsanje in the south. Practising IWRM/WE should take over from the traditional conduct of undertaking agricultural, industrial, social and cultural programmes and projects. In maximising and sustaining such success, there is also need for strengthening the human, technological and financial resource base towards monitoring and evaluation so that the intended goals and objectives are seen to be realised through appropriate indicators.

While the water resources of the country may be regarded as the engine for development and growth, the current poor state of the hydrometric and hydrometeorological network needs to be rehabilitated and that regular measurements of rainfall, evaporation, relative humidity, cloud cover, wind speed, radiation, temperatures, lake levels, silt loads, turbidity, and river flows are revamped. This initiative though, will require capacity building, technological and financial resources. Cooperation with neighbouring countries needs to be further taken to greater heights to promote joint management and development of shared watercourse systems.

The relevance of information on the country's water resources may not be overemphasised because the data will provide periodic insight on the trends in availability, quality, allocation, demand, use and management options in the domestic and industrial domains. The National Water Authority (NWA), the Catchment Management Authorities (CMAs) and District Assemblies (DAs) will be better informed on the water resources availability and quality and be

able to make informed decisions in water allocation to water utilities such as the Water Boards. In this regard, water will be recognised and appreciated to have an economic and intrinsic value by stakeholders and can therefore be used effectively and efficiently. This economic and intrinsic value will set the true levels of tariffs that consumers will have to pay for water. Subsequently, the Water Boards and other water vendors could be further encouraged to maintain excellent records of economic water accounts.

5.2 Future Perspectives and the Need to Continue the Process

The furtherance of the IWRM/WE process in Malawi and its entrenchment hinges on the five (5) strategic areas identified by the country's IWRM/WE Plan. These five strategic areas are:

(a) Policy, legal and institutional environment (the "enabling" environment);
(b) Integrated Catchment Management;
(c) Sustainable Water Resources Utilisation;
(d) IWRM Institutional Capacity Building; and
(e) IWRM Institutional Coordination and implementation.

Policy, legal and institutional environment

Under this strategic objective the main goal is to enhance the enabling environment with particular focus on policy, legal and institutional arrangements for effective implementation of IWRM programmes. In order to achieve this strategic objective, there will be need to identify and prioritise policy and legal actions that should be implemented at international, regional and national levels for implementation; how these priorities and activities of IWRM can best be incorporated within the existing legislations and policies; harmonising legislation and policy between governments ministries that relate to water resources; building capacity of government ministries, departments, parastatals, the private sector, Assemblies and local communities to implement policy and legal interventions and working in partnership with these groups, implement the policy and legal framework.

In addition, this activity will provide guidance on sectoral policies and Acts, and how these can be enforced in the course of implementation IWRM programmes. Harmonisation, implementation, monitoring and evaluation of policies and Acts will provide the necessary and required legal and institutional framework for water supply and sanitation in urban, peri-urban, market centres and rural areas. This process will also lead to the smooth transfer of all devolved functions of the rural water supply and sanitation services to local authorities and District Assemblies.

Integrated Catchment Management

The current disjointed planning of sectoral programmes and projects needs to be halted and assume a consultative process. For instance, agricultural expansion, industrial development, energy, tourism, deforestation, settlements and other such activities have an impact on water resources. Integrated Water Resources Management offers new opportunities for collaborative catchment management practices to secure decline in water resources degradation. The main goal of this strategic area is to achieve integrated catchment management for sustainable and equitable water resources development and management. To achieve this goal a number of activities and initiatives will nee to be undertaken which may include the promotion of water harvesting and conservation through the construction of more multi-purpose dams with recommended international standards; empower communities and other water users to effectively and efficiently manage water resources available from these water conservation structures and other sources; promote inclusion of catchment rehabilitation and management investment in all water-related programmes; and encourage appropriate research in environmental management in all catchment areas of the country

Sustainable Water Resources Utilisation

Water is still regarded as a God-given ***free and infinite resource*** by the majority of people in many countries of the world including Malawi. In order to change this perception, there is need for awareness building among stakeholders so that sustainable water resources utilisation can be achieved. Awareness building will be carried out with the full support of the Country Water Partnership where Water Demand Management studies can be initiated in order to inform the users. In addition, there is great need for increased and improved water delivery services in the country due to high demand created through rising population in the rural, urban and peri-urban areas. Sustainable water use is essential for agriculture, irrigation, navigation, fisheries, hydropower generation, forestry and eco-tourism, and recreation services amongst many other users. The main goal of this important strategic area is to attain sustainable water resources utilisation at all levels of society in the country. This overall goal, it is anticipated, can be achieved through advocacy towards efficient and effective water resources and supply development, management and

utilisation; promotion of efficient conservation measures of water resources; and promotion of a healthy ecological environment including wetlands through sustainable water resources development and management programmes.

IWRM Institutional Capacity Building

An important aspect of the IWRM/WE Plan will be to support effective natural resources management at all levels. Achievement of effective natural resources management will only be possible if institutions have the necessary human, financial and technological resources, an effective regulatory framework, and skills and to a larger extent there is strong political will and support. The principal goal that advances this strategic area is the development of institutional capacity for Integrated Water Resources Management. This goal will be supported by establishing an effective IWRM regulatory framework; setting up an effective human, technological and financial resources management system; instituting an effective Information Communication Technology (ICT) system for IWRM; and empowering district and sub-district structures with necessary skills and knowledge to address IWRM/WE issues.

IWRM Institutional Coordination and implementation

As one of the identified five critical challenges facing the water sector in Malawi, institutional coordination will be crucial if IWRM is to take root in the country. With decentralisation of activities to local authorities, it is envisaged that IWRM institutional coordination and implementation can best be done at the local assembly level. It is also the consideration of the IWRM/WE Plan that by the time it is being implemented, the ministry responsible for water affairs will have created or formed the National Water Authority and the Catchment Management Authorities that can then coordinate the implementation of IWRM programmes and projects.

Obstacles

It must be appreciated however that since the completion of the IWRM/WE Plan and its subsequent handover to government, the initial drive towards its final adoption, approval and implementation has been overtaken by recent events and political priorities. While the government has taken centre stage in appreciating the role and importance of IWRM in the country, national political events could derail the process and only the ministry responsible for water affairs can save its importance from fading. Time seems to be critical in the process especially when the five strategic areas have to be implemented during the period 2008 – 2012. There is therefore need for strong political will and support so that the projects outlined in the Plan take off the ground. In order to attract strong and continued political will and gain support, there will be need for immediate assistance in the form of financial resources for advocacy among decision makers to continue with the implementation of IWRM in the country before the Plan begins to gather dust in public offices. Advocacy will call for the necessary national capacity that should go into overdrive to re-ignite the spirit of the IWRM/WE initiative in the country. To the majority of the people, IWRM is only a philosophy and many have to be “converted” especially at the grassroots level. Translating IWRM into practice will enable stakeholders to immediately see the benefits. The major challenge is that decision makers still have rather limited knowledge of the new philosophy of water resources management, principles of IWRM, and the resulting water management rules.

Another challenge that the country faces, is the weak water governance system subsisting today. In this report, water governance refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services at different levels of society. As has been mentioned in Sections 2.2 and 3.4 of this report, the Water Resources Board for instance, does not have adequate capacity for monitoring water abstraction, use and management. It would therefore be difficult to have an efficient and effective IWRM/WE programme in the absence of an effective authority for water. In this regard, the government needs to be supported towards its intention to establish the National Water Authority and the Catchment Water Authorities. There is a critical gap in the institutional framework within the government especially as there is slow uptake of new personnel by some departments. In other cases, those that have been “converted” in IWRM/WE will also have been redeployed to other departments thereby hindering continuity of the process within a department.

Despite having successfully accomplished the IWRM/WE planning process and delivering the desired output to government, there is currently a rising concern on the sustenance of the initial drive with which the members of the MWP undertook the assignment. Since the Partnership consists of employed personnel in the public and private sectors, they are not bound to engage extra service to its ideals. In spite of this, the Secretariat has used its own resources to promote the process through its regular meetings with the Steering Committee. In this regard, it is highly recommended that institutional arrangements for the much awaited IWRM/WE implementation process be revisited so that a stand-alone institution is considered for establishment as a facilitator. The Secretariat also needs financial support in the form of seed funding so that it can mobilise more resources for IWRM/WE implementation.

The Role of the Malawi Water Partnership

One of the most important factors that influenced the smooth establishment of the Malawi water Partnership and the accomplishment of the IWRM/WE Plan under the PAWD Project (refer to Section 3.2) was the availability of trained and dedicated personnel with uncompromising interest and belief in Integrated Water Resources Management as a tool towards sustainable water resources management in the country. In addition, the Secretariat provided unparalleled management of the process to the extent that government was convinced that the process was complementing its development agenda.

Having brought IWRM/WE to the fore, it is still incumbent upon the Partnership to spearhead the process towards its meaningful conclusion through the implementation of IWRM/WE programmes and projects. Currently, some members of the Partnership have taken it upon themselves to prepare concept notes for possible funding from Cooperating Partners with a view of kick-starting the implementation process before the projects outlined in the Plan begin to get obsolete. It is this spirit that can increase the momentum of IWRM/WE process before it begins to be regarded as an academic hypothesis in the eyes of the "unconverted" especially in the public sector. It is therefore critically necessary that a small unit be set up consisting of core personnel that will be responsible for financial accounting, capacity and awareness building, preparing proposals and facilitation of IWRM/WE programmes and projects apart from the existing personnel within the Secretariat. There is critical need for constant liaison between the Partnership and government so that the two can regularly follow-up on the programmes and projects outlined in the Plan.

While the future of the Plan cannot be guaranteed at the moment as indicated in the third paragraph of page 20 of this report, it would be prudent for the Partnership to dedicate some of its members to preparing IWRM/WE proposals for funding. Implementation of such projects would "motivate" government for its full support to the process of implementation even with change of administration in the future as the benefits of IWRM/WE would be self manifested. As pointed out earlier, some members of the Partnership have secure employment and have to allocate full time to their assignments. They *may not* have adequate time to allocate to this recommendation. Others however, have all the time to work full time and live up to deadlines as may be required.

The Role of the GWP – SA

The critical role that GWP – SA can play is that of facilitator. The establishment of the proposed unit within the Malawi Water Partnership will require financing especially for running expenses of the unit and the proposed personnel time since office infrastructure could be identified. Similarly, GWP – SA would also require to assist in soliciting financial support for the Secretariat in the form of seed funding in order that it successfully supervises the unit in the process of preparing the project proposals mentioned in the earlier section.

Capacity building in preparing project proposals would also be necessary for those that have already completed their IWRM/WE Plans. Various Cooperating Partners have their own formats and these would need to be extended to the country units. These capacity building seminars are important for purposes of consistency, adherence to donor needs and requirements and avoiding waste of time in revisions if the draft proposals do not conform to the desired formats. Upon preparing project proposals, the Malawi Water Partnership would direct these to GWP – SA to identify possible financiers by its own or through the GWPO.

Awareness building is also important. Since IWRM/WE was introduced to the world in 1985 in Dublin, there are some countries which have gone a long way in establishing IWRM projects but these have not been widely published. It would therefore be of great value to southern Africans to visit such project (both successful and failed ones) so that lessons are learnt and mistakes are avoided in future. Once a project has been funded, the Country Water Partnership in close liaison and collaboration with the GWP – SA would extend invitation to interested Partners from around the region and beyond to share experiences on the project. In this case, Cooperating Partners would be proud to be associated with such success and encourage them to finance more programmes at the country level or replicate the same in other countries of the region. In the interim, GWP – SA should begin to assist those Country Partnerships that are preparing project proposals for financing of IWRM/WE projects at the country level by:

- Identifying potential financiers; and
- Supporting these submissions as if they were its own.

The Malawi Water Partnership should therefore liaise and arrange with the GWP – SA to allocate some funds for personnel time to prepare suitable proposals for the projects that have been identified in the IWRM/WE Plan.

5.3 Constraints, Opportunities and Perspectives

Integrated Water resources Management in Malawi faces a number of constraints which must be considered in relation to its position within the national development agenda and the current geo-political environment. Notwithstanding the fact that the IWRM/WE Plan has successfully been completed and widely accepted by government, there are still fears that its implementation could face several huddles.

Among the constraints is the realisation that many of the sectoral policies within government have not as yet incorporated IWRM/WE except in the New Water Policy for the ministry responsible for water affairs. The full appreciation of IWRM/WE and its incorporation into these policies therefore, would facilitate the harmonisation of national legislation on how water is developed, used and managed in the country. Most of the government ministries and departments have formed cocoons around themselves and have become compartmentalised with a view of becoming independent from other initiatives so that they can achieve their own goals. In this way, water-related programmes and projects within the ministries and departments are executed without collaboration and consultations resulting in duplication of resources.

Compounding this shortcoming, the issue of monitoring and evaluation also arises. Even though various development projects continue to be established in all the 28 or so districts of the country, monitoring and evaluation of their intended impacts far lags behind mainly due to insufficient capacity and expertise in the area of monitoring and evaluation and inadequacy in human, technological and financial resources. There is need to change the current mindset of personnel in the various departments both in the public and private sectors and the civil society organisations from that which assumes that a project's output is the same as the project's outcome to the one that differentiates the two.

Apart from these policy shortcomings, there is also need for full government commitment to pursue and integrate IWRM/WE into its policy framework such as the Malawi Growth and Development Strategy so that relevant development programmes are carried out with a pinch of IWRM. Unfortunately, water is still regarded as an infinite resource and there is need for more awareness building among the citizenry so that they are able to appreciate that water is a finite resource which is bound to become scarcer due to pollution, rainfall variability, land degradation, erosion and climate change.

Human, financial and technological resources will also have a bearing on the implementation of IWRM in the country. While the availability of informed people within government ministries and the private sector including civil society organisations has been adequate, the impact of HIV/AIDS would seriously affect the future of IWRM implementation. In addition, frequent staff turnover coupled with retrenchments, retirements and training or job opportunities abroad would also affect the process.

Since large water-related investments are usually financed through loans and grants, the security of IWRM/WE will depend on the interest the financier has in the process. Various donors focus their resources on particular thematic areas such as climate change, agriculture, energy, biodiversity, heath or education and may not have interest in IWRM even though all these thematic areas are interlinked. Funding for IWRM/WE projects could therefore be one of the critical constraints towards its full implementation. Inadequacy of financial resources would affect availability of the required technologies needed in IWRM/WE programme formulation, development and management.

The other important consideration is the speed with which government needs to set the IWRM/WE process in motion. Since the completion of the Plan, there has been undue delay in its final approval by cabinet so that it can finally be accepted and adopted as a development tool within the country. The laxity in commitment and support could lead to the process being overtaken by other government priorities especially now that the country stands to be affected by the world economic meltdown.

Despite the aforementioned constraints, there are nonetheless, some strengths which must be pointed out in this report. Firstly, it is an added advantage that government has, through its Ministry of Irrigation and Water Development, already accepted the process and committed itself to allocate part of its domestic resources to the implementation of IWRM in the country. Secondly, the greatest opportunity in Malawi is that a National Water Policy and Bill are in place that are fully harmonised with the SADC Protocol on Shared Watercourses and the SADC Regional Water Policy. This policy is anchored on promoting IWRM principles and was prepared through a very consultative process. Thirdly, personnel in the Ministry of Irrigation and Water Development, particularly from the water and sanitation sectors have and continue to participate in IWRM short and long courses in order to increase

capacity in the sector. The eventual establishment of Catchment Management Authorities will greatly help in the implementation of IWRM approaches. Fourthly, there is a critical mass of people who were involved in the planning process and have a considerable amount of knowledge about IWRM to the extent that implementation of IWRM/WE programmes and projects would be easy to undertake. Some of these people have dedicated much of their time to advocating for IWRM/WE implementation and are ready to take the process to greater heights. These strengths are a catalyst towards fulfilling the goals of the IWRM/WE process with are congruent to those of the Government of Malawi spelt out in its Growth and Development Strategy, the Millennium Development Goals and NEPAD.

There are currently a number of opportunities which should be taken advantage of in order to propel IWRM/WE activities in the country. These include:

(a) The Malawi Government has put water and its development as Priority No. 2, after Agriculture and Food Security, among its 6 priorities among priorities. This high ranking of water development in the country could lead to IWRM/WE being easily assimilated into the overall water development programme;
(b) The current administration appreciates the role of water conservation and has advised the people not to rely entirely on groundwater for their water supply because this would lead to over-abstraction. This is the reason why the Head of State has personally encouraged the Ministry of Irrigation and Water Development to rehabilitate old dams and construct new ones;
(c) Climate change may be widely abhorred as a phenomenon that will lead to scarce water resources, disasters in the form of droughts and floods, loss of biodiversity and many more catastrophes. However, the more policy and decision makers realise that we collectively face this peril, the more the chances of adopting sustainable water resources management through IWRM/WE;
(d) The relative peace and calm, law and order in southern Africa should not be taken for granted. In other war-torn countries and sub-regions of Africa, it becomes extremely difficult to implement programmes that are geared towards the emancipation of the people. Southern Africa in general and Malawi in particular is peaceful and this is a clear opportunity for entrenching IWRM/WE programmes the outcomes of which are likely to encourage more peace and tranquillity;
(e) IWRM/WE will also support the One Village – One Product (OVOP) initiative in Malawi and stimulate intra-national and international commerce and trade; and
(f) The outcomes of the IWRM/WE implementation in Malawi would catalyse the review and harmonisation of other sectoral policies with the National Water Policy as these would bring real and tangible benefits to the country.

Recommendations

The following recommendations are proposed for consideration based on the weaknesses and opportunities that have been highlighted in this report:

(a) The GWP – SA should consider assisting the Malawi Water Partnership in the areas of advocacy, awareness and capacity building and IWRM/WE demonstration projects so that many people are “converted” to the principles of IWRM/WE. The main focus of this initiative will be to build capacity towards policy harmonisation among the government ministries and departments and influence their current mindset to change;
(b) The Malawi water partnership should also take a central role in encouraging the ministry responsible for water affairs to strengthen its monitoring and evaluation programmes especially for water conservation projects that the government has introduced. In addition, the ministry, together with the Partnership should take a central role in evaluating water use and wastage especially in public institutions such as hospitals, schools and other public areas where water wastage is high;
(c) The government should be encouraged to work closely with the Partnership so that there can be shared experiences between the two. While government is planning and implementing its development projects, it is possible that IWRM/WE can be left out in the planning process. Bringing on board the Partnership could add value to the process;
(d) Human, financial and technological resources will also be critical in all development programmes and projects both in the public and private sector as well as for civil society organisations. Adequate financial resources should be allocated by these institutions for manpower development and welfare. This would include resources for training and support for those that are infected and/or affected by the HIV/AIDS pandemic;
(e) Development partners should also be encouraged to seriously take into account national priorities rather than those that are influenced from global agendas only. For instance, an example can be given of the (in) famous International Drinking Water and Sanitation Decade (IDWSD) of the 1980s when there was a global drive

towards improvement of water supply and sanitation in all the countries of the world. Unfortunately, by 1990s Malawi was still lagging behind its full capacity to supply potable water to its population and sanitation is still way below the desired ratio even in the 21st Century. In this regard, if IWRM is taken into consideration by both the National Water Policy and is also mentioned in the Malawi Growth and development Strategy, it ought to be given prominence in the national development agenda;

(f) The Government of Malawi should quickly approve and launch the IWRM/WE Plan soon after May 19, 2009[1] when a new Cabinet is formed. The Ministry of Irrigation and Water Development should regularly push for the approval of the Plan through its minister;

(g) The Ministry of Irrigation and Water Development should spearhead IWRM/WE in its development programmes to show that it is committed to it and realises the importance of water as one of the government's high priorities;

(h) The public and private sectors and civil society should support the efforts of the current administration which appreciates the role of water conservation. These institutions and others such as religious organisations should also borrow a leaf from government and start taking interest in water conservation project; and

(i) GWP – SA should facilitate research in water-related programmes as one way of dealing with climate change and variability;

The above recommendations have considered existing challenges, weaknesses, strengths and opportunities that relate to IWRM/WE planning process in Malawi and what future lies ahead for IWRM/WE. They are not meant to be exhaustive but provide some guidance towards formulating solutions to the existing challenges and weaknesses and taking advantage of the opportunities that also exist but not recognised. These recommendations may take a national or regional dimension depending on the nature of the challenges, weaknesses, strengths and opportunities.

[1] This is the date when the country holds its Presidential and Parliamentary Elections.

ENDNOTES

[1] IUCN, ZRA, SARDC, Sida (2000); *State of the Environment Zambezi Basin 2000*, IUCN, ZRA, SARDC, Sida, Maseru/Lusaka/Harare
[2] ibid
[3] ibid
[4] Nkomo, J. C., Nyong, A. O., and K. Kulindwa (2006). The Impacts of Climate Change in Africa, Cape Town/Jos/Dar es Salaam. http://www.hm-treasury.gov.uk/d/Chapter_5_The_Impacts_of_Climate_Change_in_Africa-5.pdf
[5] Ibid.
[6] Malawi Environment Statistics; http://www.nationmaster.com/country/mi-malawi/env-environment
[7] ibid
[8] CIA (2008); The World Fact book; https://www.cia.gov/library/publications/the-world-factbook/geos/mi.html
[9] Eldis; Malawi 2008 Population and Housing Census; http://www.eldis.org/assets/Docs/40910.html
[10] African Development Bank (2008). Support to Local Economic Development Project – Malawi; http://www.afdb.org/fileadmin/uploads/afdb/documents/project-and-operations/mw-2008-079-en-adf-bd-wp-malawi-ar-support-to-local-economic-development-project.pdf
[11] Manda, M. A. Z., (2007). Mchenga Urban Poor Housing Fund in Malawi, Environment and Urbanisation, http://eau.sagepub.com/cgi/reprint/19/2/337.pdf
[12] Wikipedia, the Free Encyclopedia: Malawi – Economy. http://en.wikipedia.org/wiki/Malawi
[13] Malawi Government/Malawi Water Partnership (2008). Malawi Integrated Water Resources Management and Water Efficiency (IWRM/WE) Plan 2008-2012, Final Draft, Lilongwe
[14] ibid
[15] Ibid.
[16] Op cit 13
[17] Malawi Government (1994). *Water Resources Management Policy and Strategies*, Ministry of Works, Lilongwe
[18] Fruhling, P., (1996). *A Liquid More Valuable than Gold - On the Water Crisis in Southern Africa: Future Risks and Solutions*. Sida: Stockholm
[19] IPCC (2001). *Third Assessment Report: Climate Change Impacts, Adaptation and Vulnerability*, IPCC Working Group II, Geneva, http://www.grida.no/climate/ipcc_tar/wg2/index.htm
[20] Malawi Government (2007). National Water Development Programme II and Integrated Water Resources Management and Water Efficiency Plan. A Report of the Regional Stakeholders Consultative Workshop (Centre) held on 30th June – 1st July, 2007 capital hotel, Lilongwe
[21] Ibid
[22] Op Cit 20
[23] Op Cit 20
[24] Macy, P. (Ed.) 1999). *Urban Water Demand Management in Southern Africa: The Conservation Potential*, Sida Publications on Water Resources No. 13, Department for Natural Resources and the Environment, Swedish International Development Cooperation Agency, Stockholm
[25] W. Mulwafu, W., Chavula, G., Chipeta, C., Ferguson, A., Chilima, G. and B. Nkhoma (2002). *The Status of Water Demand Management in Malawi and Strategies for Promoting It*; ***In*** Southern Africa's Regional Project World Conservation Union (IUCN) Phases I and II, Harare. www.iucn.org/places/rosa/wdm
[26] Op. cit 24
[27] Laisi, E. (2006). Establishment of a Consultative Forum for the Shire River Basin, Final Report, Centre for Development Research and Information in Southern Africa, Lilongwe
[28] Mineral and Appropriate Technology Applicable in Malawi (MATAMA) (2004). Impacts of Local, Regional & Global Climate Change with particular reference to Hydroelectric Generation in the Zambezi River Basin, Final Report submitted to the Centre for Energy, Environment and Engineering Zambia (CEEEZ) Limited, Lilongwe
[29] Op. cit 25
[30] Op. cit 25
[31] Op. cit 25
[32] Op. cit 28
[33] Op. cit 25
[34] Laisi, E. *Personal Experience*
[35] Malawi Government/UNDP (1986). *National Water Resources Master Plan*, Water Department, Lilongwe
[36] Emma Mbalame, Regional Water Officer (Centre) – *Personal view*.
[37] Malawi Government (1969). *Water Resources Act*, Water Resources Division, Lilongwe

[38] Op. Cit 13
[39] Ibid.
[40] Ibid.
[41] Malawi Government (2008). *Malawi Population and Housing Census*, National Statistical Office, Zomba
[42] Op. cit 1
[43] Ibid.
[44] Nkhoma, B. B., Urban Water Supply and Sanitation. *In* Malawi Government (2007). National Water Development Programme II and Integrated Water Resources Management and Water Efficiency Plan. A Report of the Regional Stakeholders Consultative Workshop (Centre) held on 30th June – 1st July, 2007 capital hotel, Lilongwe
[45] Ibid.