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**GOVERNMENT OF THE REPUBLIC OF ZAMBIA**

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**MINISTRY OF ENERGY AND WATER DEVELOPMENT**

**NATIONAL WATER POLICY**

*Lusaka*

*November 1994*



## FOREWORD

Water is life. This Policy document on water is an outcome of a consultative process carried out by the Ministry of Energy and Water Development under the National Water Policy Development Initiative (NWPDI) over a period of three months from September to November, 1993. The formulation of the policy symbolises a new era in our quest for a sustainable development process since, for the first time, government is putting in place a framework for future development of the Water Sector.

The Water sector in Zambia has all along operated on various ad-hoc sub-sector water user objectives which provided guidelines for development and management purposes. Such guidelines were contained in the Ministerial policy statement on "Construction, Maintenance and Operation of Public Water Supplies" of December, 1974. Invariably, the Water Sector has for a long time been characterised by a diffuse institutional framework as the most frequent and persistent cause of poor performance resulting in crisis management and development of water resources. This has obscured the formulation and/or implementation of a sustainable national water strategy.

Water plays an important role in augmenting our standards of living and in ensuring more bearable conditions of existence. It is also a vital part of the environment and a home for many forms of life on which our well being ultimately depends. Any factors contributing to rendering water unfit for use through contamination poses serious risks to health and economic productivity of the country. It is therefore imperative that measures are taken to ensure that water does not hinder the sustainable national development effort.

The remaining task for the Ministry now is to work out a comprehensive programme of action that will translate the Policy into actual activities.

Our vision for the contribution of water to the improvement of the quality of life has now been elaborated. The aims and aspirations expressed in this document will however, remain a distant dream if the identified strategies are not put into practice. Only successful implementation of this Policy will justify the time, human and financial resources spent on its preparation.



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Last, but not the least, sincere thanks go to all the participants and resource persons to the different workshops for their invaluable contributions to this exercise. Their names appear in Appendices I and II.

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## **ABBREVIATIONS AND SYMBOLS**

<b>km</b>	<b>kilometre</b>
<b>m</b>	<b>meters</b>
<b>mm</b>	<b>millimetre</b>
<b>sq</b>	<b>square</b>
<b>O&amp;M</b>	<b>Operation and Maintenance</b>
<b>MCM</b>	<b>Million Cubic Meters</b>
<b>CUMECS</b>	<b>Cubic Meters per Second</b>
<b>MEWD</b>	<b>Ministry of Energy &amp; Water Development</b>
<b>DWA</b>	<b>Department of Water Affairs</b>
<b>NCSR</b>	<b>National Council for Scientific Research</b>
<b>NWPDI</b>	<b>National Water Policy Development Initiative</b>
<b>UNZA</b>	<b>University of Zambia</b>
<b>NCDP</b>	<b>National Commission for Development Planning</b>
<b>WSS</b>	<b>Water Supply and Sanitation</b>
<b>PCU</b>	<b>Programmes Coordination Unit</b>
<b>WSDG</b>	<b>Water Sector Development Group</b>
<b>ZCCM</b>	<b>Zambia Consolidated Copper Mines</b>
<b>RWSS</b>	<b>Rural Water Supply and Sanitation</b>
<b>UWSS</b>	<b>Urban Water Supply and Sanitation</b>
<b>ICG</b>	<b>Interim Consultancy Group</b>
<b>MW</b>	<b>Mega-Watts</b>

## **CHAPTER 1: BACKGROUND TO THE WATER POLICY**

### **1.1 INTRODUCTION**

Zambia has, until the advent of the Third Republic, never had a coherent Water Policy for planning, management and development of water resources. What has been in place are various ad-hoc water user objectives which have merely provided principles for the often crisis prone management and uncoordinated development purposes. These principles are contained in a Ministerial policy statement entitled "Construction, Maintenance and Operation of Public Water Supplies" of December, 1974. In recognition of the important role water plays not only in the ordinary lives of the people but also in the economic development of the country, the Government of the Republic of Zambia, through the Ministry of Energy and Water Development, has recognised the need for the evolution of a Water Policy that would guide developments in the conservation management, demand and supply of the water resources in the country. This has become inevitable in view of the changed macro-economic environment in which liberalisation and private enterprise have become the norm. Furthermore, the water sector has for a long time been identified with an inherent weak institutional capacity which is unable to prevent deterioration of facilities and service delivery.

In pursuit of evolving the Water Policy, the Ministry of Energy and Water Development decided to hold two workshops at which all stakeholders were invited to discuss issues related to water resources and water supply and sanitation in detail and make relevant policy proposals for Government's consideration. The conclusions of these workshops were harmonised into this document. The entire process of developing the water Policy stretched over a period of 3 months from September to November, 1993.

This policy document is arranged into three main sections. The first chapter provides the general background to the Water Policy by highlighting the role of water in national development and the current water resource base in the country. The second chapter comprises the main policy measures and outlines strategies for implementation. The third and last chapter presents the institutional and legal reforms needed for effective implementation of this policy.

## **1.2 ROLE OF WATER IN NATIONAL DEVELOPMENT**

The water sector is one of the principal sectors with vital links to other sectors in the economy. The Government has for the past years made massive investments in water supply and sanitation schemes throughout the country. However, it is sad to note that 90% of the investment was contributed by donors and other cooperating partners.

Water is critical to food and agriculture, health, industry, energy, transport and tourism. It also provides formal employment to many people involved in water management and the various water supply and sanitation schemes in the country. Below are some of the important roles water plays in various sectors.

### **1.2.1 Water and Food & Agriculture**

In the food and agriculture sector, water is a prime factor in the production of adequate food for the country. Water makes the soil productive. It is also important in the sustenance of the fishing industry which has an important role to play in the provision of a certain level of nutrition needed by the people. Furthermore, the Government's repeated call for diversification from a mining dependent economy to one based on agriculture, puts water on an even much greater demand. A lot of investments have been made in the food and agriculture sector. This sector provides employment to a large percentage of the population (particularly rural population). In general, water may be used for irrigation, livestock watering and fresh water aquaculture.



### **1.2.2 Water and Health**

The amount and quality of water consumed by a community determines its standard of living. The benefits from supply of sufficient quantities and good quality water and sanitation are important in as far as the sustenance of health is concerned. The government has thus invested in the provision of safe and accessible drinking water in order to enhance healthy and productive lives of the people. Improved access to water and sanitation also yields direct economic benefits. For many people (particularly in rural areas), obtaining water is time-consuming and heavy work, taking up most of the women's time. It is evident therefore that water resources management to bring safe drinking water within easy reach of all communities and the provision of facilities to dispose waste in a sanitary manner, would greatly improve human health and also release time and energy to produce more for development. Although our water resources are considered to be abundant and in relative good quality, protection of sources from contamination to avert future shortages cannot be over emphasised.

### **1.2.3 Water and Industry**

Water plays an important role in many industries upon which the economic development of the country is largely dependent. It is mainly used in steam generation/or heating, cooling, constituent of the product, product dilution, reagent make-up, product or surface washing and transport of materials or wastes. The water quality requirements vary depending on the intended use. Apart from the provision of employments in industries, exports of some of the manufactured products provide a source of foreign exchange.

#### **1.2.4 Water and Energy**

Energy is the life-blood of any economy. Over 90% of the Zambia's electricity is hydro-power. Currently, electricity contributes 12% to the national energy mix. Water is, therefore, an important natural resource required for generation of electricity which is not only a vital input to mining, industrial, commercial and increasingly agricultural activities, but the operations of the electricity industry also provide employment to over 4,000 people, which is about 1% of total formal employment. Zambia, at present earns a monthly average of about US\$2 million in exports of electricity to neighbouring countries.

#### **1.2.5 Water and Transportation**

In a country like Zambia which is faced with economic and social effects of escalating oil import bills, water transportation turns out to be an important alternative to other forms of transportation like road, air and rail in areas with navigable rivers and lakes. Current statistics show that in 1992, a total cargo of about 296 tonnes and 8,669 passengers used the water transport through Mpulungu Port. Its main advantage lies in its ability to move goods in bulk. Water transport has also proved to be most suitable and convenient in areas with large surface water bodies such as lake Bangweulu and its swamps, Lukanga swamps and parts of Western Province where the floods are a recurring event. In view of this the Government maintains a system of canals in such areas for navigation and general drainage.

#### **1.2.6 Water, Recreation and Tourism**

The existence of the Victoria falls on the Zambezi river offers the largest and most popular single tourist attraction in the country. Other tourist attractions along the Zambezi river include water rafting downstream the Victoria falls and Kariba dam, and boating in lake Kariba as well as upstream the Victoria falls. Sport fishing in Kafue river, lake Kariba, lake Itzhi-Tezhi and lake Tanganyika is a popular recreational activity. It should further be noted that almost all our major tourist attraction sites such as game parks are situated along rivers, lakes or in wetlands that are water supported ecosystems.

The abundance of water resources in Zambia has not only assured the country of meeting the growing demands on water for all its usage, but has encouraged the development of some sectors of our economy that contribute both to the level of economic activity and the gross national product.

### **1.3 WATER RESOURCE BASE**

The water resources of Zambia are considered, in normal years, to be sufficient to meet both short and long term requirements of the country. However water is a limited resource. In this policy document, water is treated as a scarce resource. This approach is based on the realisation that the quantities of water available for exploitation and use at costs that are affordable by many users is limited by various factors. These include unfavourable climatic conditions in some regions, uneven geographic distribution in relation to areas of demand, declining quality in some basins such as the Kafue and the obligation to share the available water resources with other countries in a common river basin. The other consideration that makes water a scarce resource is the seasonal/annual variability both quantitatively and qualitatively in some basins particularly the southern part of the country where there are very few perennial rivers. A brief outline of the water resources of Zambia is discussed below:

#### **1.3.1 Surface Water**

The mean annual rainfall varies from 1,400 mm in the North to 700 mm in the South along the shores of lake Kariba (see figure 1). The total run-off is of the order of 4,000 cumecs when run-off from Angola is included. The run-off generated locally is 3,200 cumecs or 100,000 MCM annually (Mac Donald 1990). Although the south receives half the amount of rainfall as the North, the total run-off produced by the North is five times that from the South (see figure 2). In comparison to other countries in the Zambezi basin, the total run-off from Zambia contributes 40.7% of total basin flow (see figure 3).

The country has a well distributed system of perennial rivers, streams, lakes and swamps throughout its territory. There are five river basins of Zambezi, Kafue, Luangwa, Chambeshi/Luapula and Tanganyika (see figure 4). In all, the surface water resources are estimated to cover 45,000 square kilometres (6%) of the total land area. The Zambezi river basin covers an estimated land area of 1.18 million sq km and spreads over several territories within the region. Of this total area, 578,000 sq km is within the Zambian territory and constitutes about 77% of the total Zambian land area.

The Zambezi basin represents by far the largest water resource for Zambia and is currently used for hydro-power generation at Victoria Falls (108 MW) and Kariba Dam (1,266 MW). Other potential sites for hydropower generation include Batoka Gorge with an estimated capacity of 1,200 to 1,600 MW. The water quality is generally good for domestic as well as recreational uses. This has mainly been attributed to the limited number of industries that release their effluents into the river system.

The Kafue river with total length of 1,576 km is part of the Zambezi basin but is completely inside Zambian territory and consists of 152,000 sq km with mean annual run-off of 350 cumecs. The catchment occupies 20 percent of Zambia's total land area and 17 percent of whole Zambezi basin and contributes an estimated 12 per cent of basin flow at its confluence with the Zambezi river. By virtue of its location and course, i.e. where all major industrial towns and centres are located, the river has become the most important and most utilized river basin in the country. The river basin has potential for irrigated agriculture, hydro-power generation, fisheries, tourism and development of wetlands. The water quality in this basin is severely affected by wastes that find their way through various streams some of which originate from leaking pollution control dams and dumps. As a result the Kafue river serves as a sink for industrial, mining and sewage effluents emanating from major towns along its course. The mining pollutants consist of suspended solids, Cadmium, Lead and Zinc. Industrial waste consist of tannery, fertilizer and textile effluents, filter mud and oil from sugar factory.

The Luangwa river with total length of 867 km has a basin which consists of some 165,000 sq km and contributes an estimated 500 cumecs as mean annual run-off to the Zambezi basin at its confluence with the Zambezi. This yield constitutes an estimated 17 percent to the total basin flow. The Luangwa river is characterized by high turbidity and high sediment loads. Its mean annual sediment load is of the order of 8 million tonnes. For this reason the river has less/no potential for damming. However, the basin supports abundant wildlife and fishing activities. Water quality is mainly influenced by erosion that occurs in the catchment as a result of overgrazing in the game parks or the land use practices on the slopes of hills. The water is generally regarded to be 'hard' with PH values above 8.0 in the Luangwa main stream.

The Chambeshi and the Luapula rivers are part of the Congo basin and discharge their flow through Lake Mweru into the Congo river which flows towards the west into the Atlantic Ocean. The total length of the Chambeshi from the source to the Bangweulu swamps is about 579 km. Luapula river on the other hand is 627 km from lake Bangweulu to lake Mweru. It also forms the boundary between Zambia and Zaire for most of its length. There is potential for further construction of small hydropower schemes at several locations within the two basins. Fishing and water transport are the major current water related activities. Water quality in these basins is mainly effluenced by natural conditions of soils and general geology. In general the basins have 'soft water' with PH values less than 7. As a result of high rainfall, these basins have plenty freshwater bodies in natural lakes , swamps and dambos.

In addition to the above river basins, Zambia has large natural lakes such as Bangweulu , Mweru-wa-Ntipa, Mweru and Tanganyika. The first two lie completely within Zambia while the third and fourth are shared with other countries. The Tanganyika and the Mweru-wa-Ntipa is linked to any river basins referred to above.

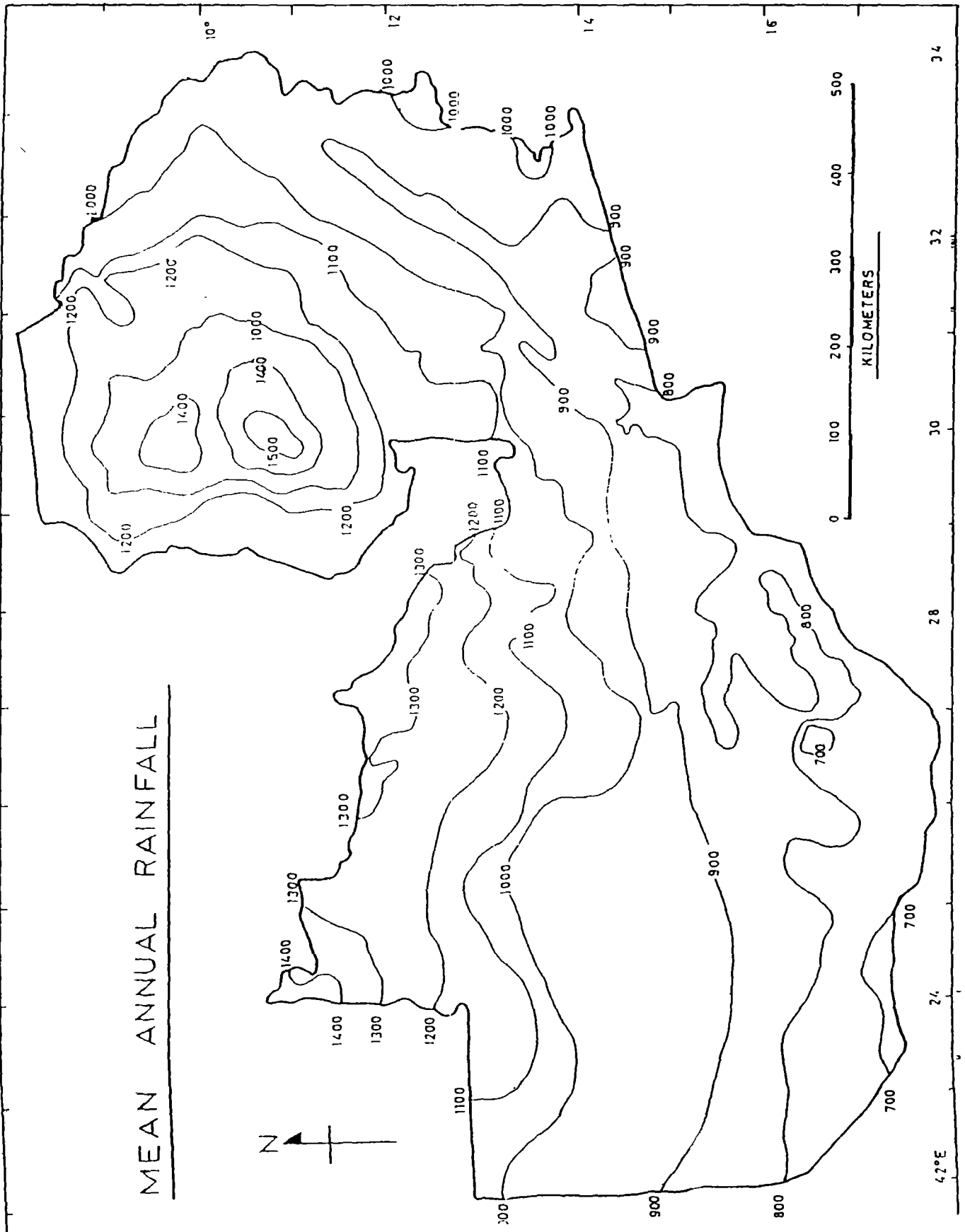


Figure 1

Figure 2

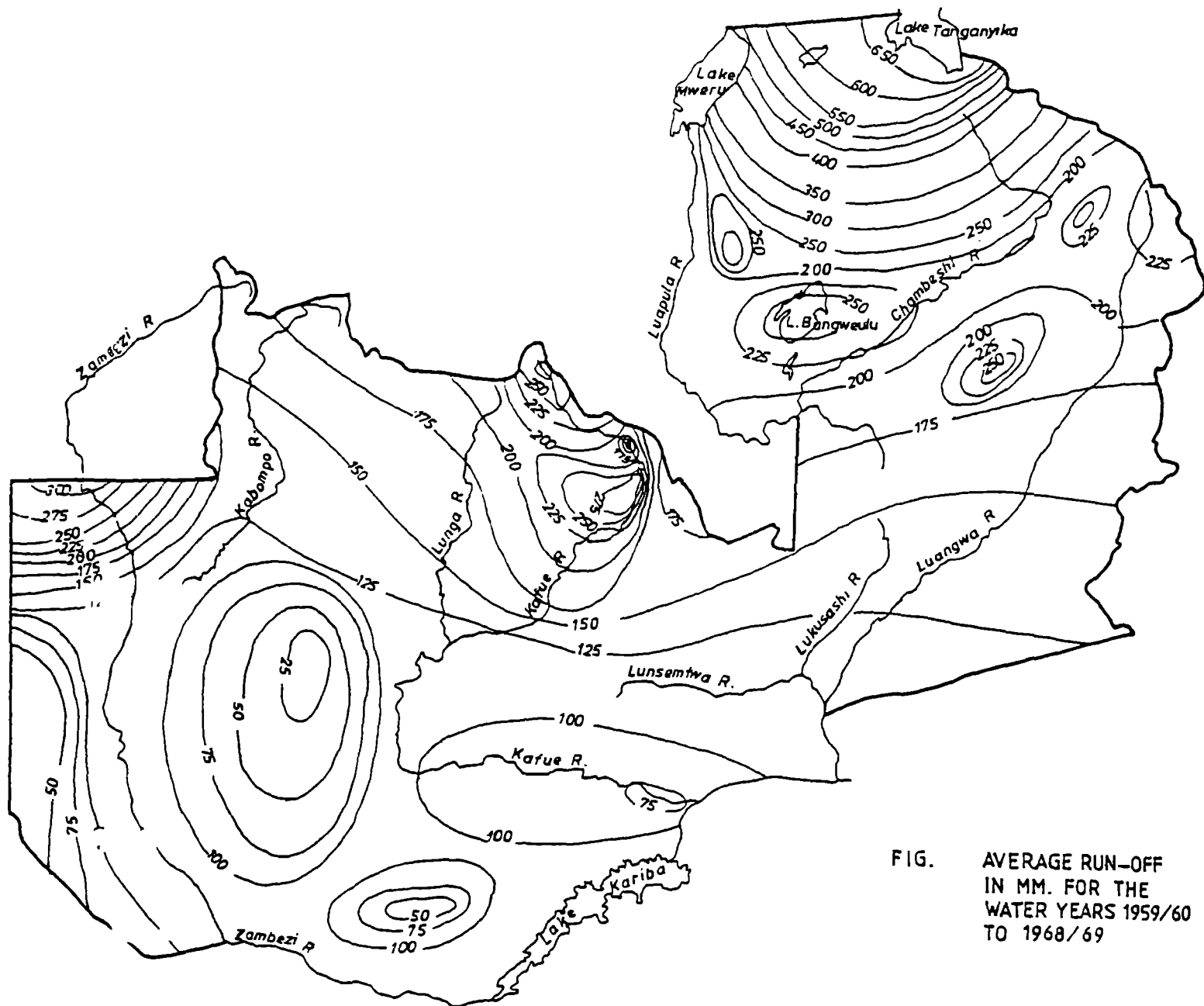
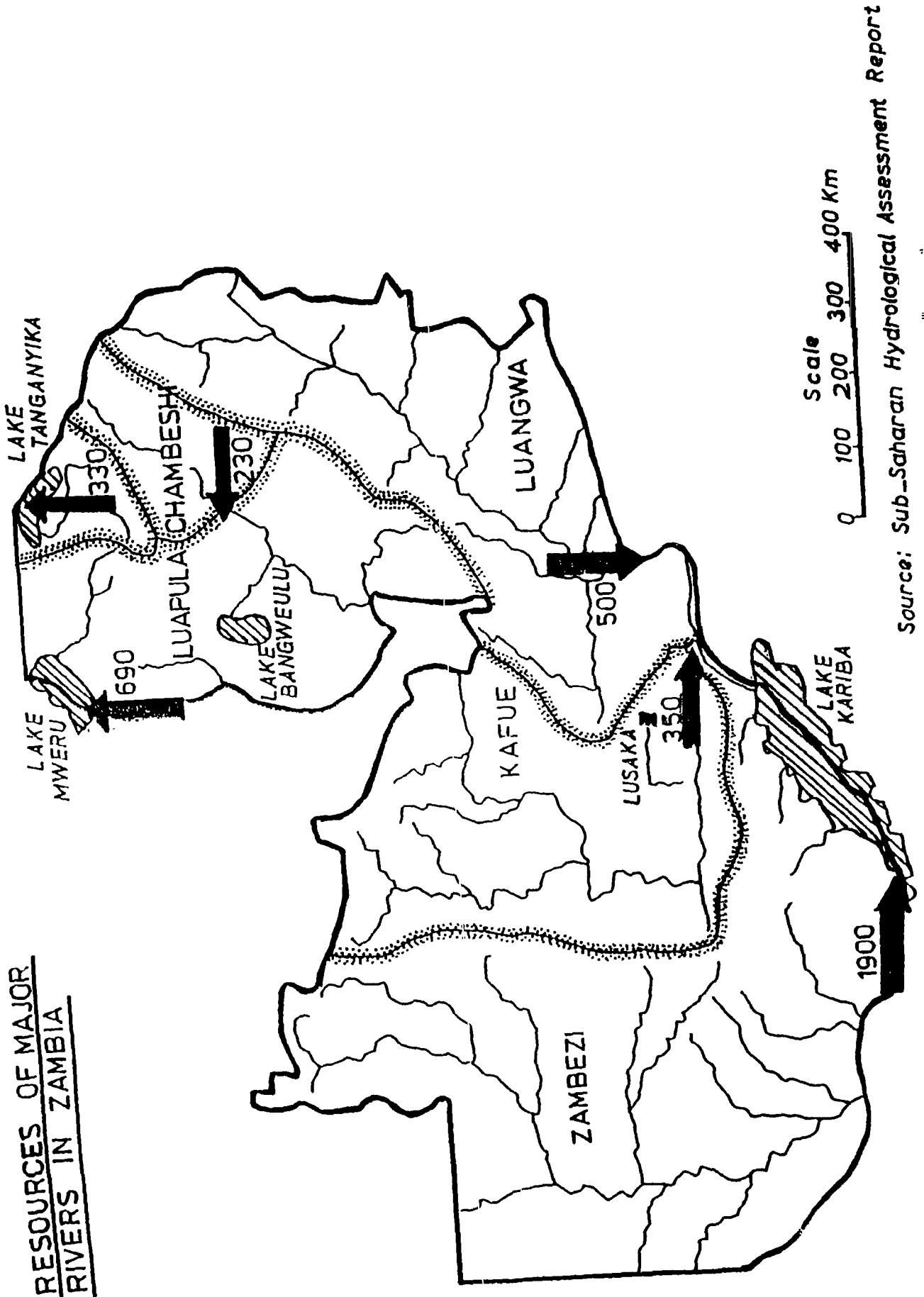


FIG. AVERAGE RUN-OFF  
IN MM. FOR THE  
WATER YEARS 1959/60  
TO 1968/69

Source: HYDROLOGICAL BRANCH OF DWA - ZAMBIA

Background



RESOURCES OF MAJOR RIVERS IN ZAMBIA

Figure 4



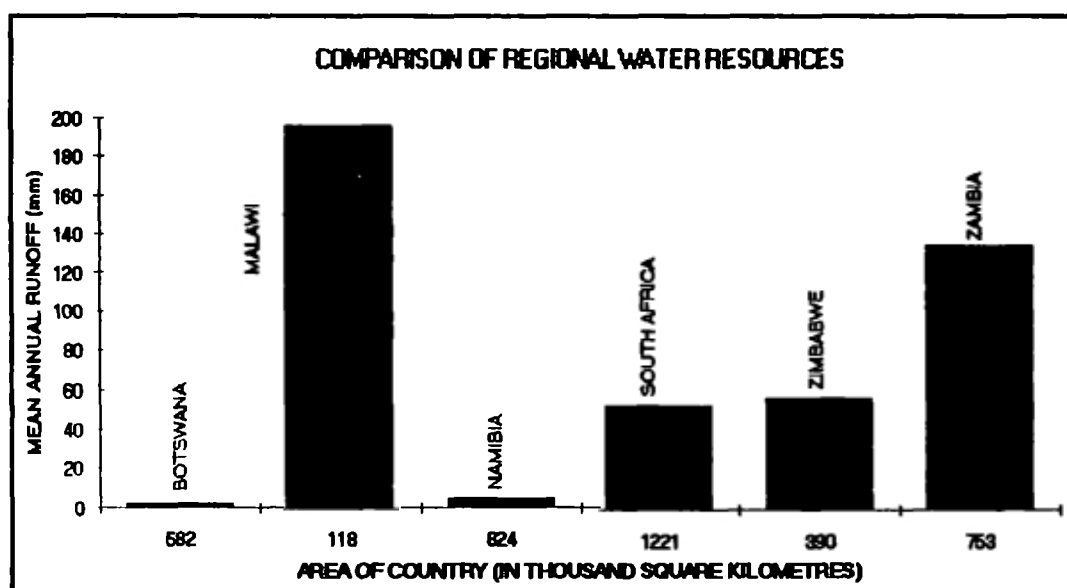


Figure 3. Comparison of Regional Surface Water Resources  
 Note: The run off of boarder rivers is not included.

TABLE 1 SHOWING COUNTRY AREA AND RUN - OFF

COUNTRY	AREA (Km <sup>2</sup> )	RUN - OFF (mm)
BOTSWANA	581,730	2
MALAWI	118,480	196
NAMIBIA	824,290	5
SOUTH AFRICA	1,221,037	53
ZIMBABWE	390,580	57
ZAMBIA	753,610	135

Source: Sub-Saharan Hydrological Assessment Report

### 1.3.2 Ground Water

Apart from surface water resources, Zambia enjoys favourable ground water conditions compared to most countries in the Southern African region with regards to depth, storage capacity, available yields and exploitation potential. The total ground water storage is estimated at 1,740,380 MCM and ground water recharge of 160,080 MCM per annum (Mac Donald 1990). Other studies of ground water resources of Zambia have come up with four major drainage basins and the findings are shown below:

(Source: Chenov 1978)

**TABLE 2. GROUND WATER POTENTIAL IN ZAMBIA**

( All values in million cubic metres )

	Drainage Basin	Luapula- Tanganyika	Luangwa	Kafue	Zambezi	Total
1	Basin Area Km <sup>2</sup>	194,000	147,500	155,000	256,000	752,000
2	Total Mean Annual Rainfall (mm)	214.1	122.3	149.72	228.69	714.85
3	Ground-water through flow	0.83	1.634	0.96	0.22	3.65
4	Vertical Recharge	41.5	33.02	24.45	64.03	160.08
5	Ground- water Storage	377.7	242.76	252.06	86.82	1,740.4

The exploitation of groundwater resources in the country goes on without any monitoring or regulation. This is compounded by the fact that groundwater has always been regarded as private owned. This inherent weakness has resulted into failure to delineate potential areas which would support the agricultural and industrial aspects in the above basins.

Therefore, there is need for the Department of Water Affairs to redefine the functions of the Drilling Section so that its efforts are directed towards:

- i) drilling of boreholes only for Government institutions a need arise;
- ii) drilling boreholes purely for exploratory work in order to facilitate collection of data for hydrogeological monitoring and assessment;
- iii) drilling boreholes for communities as part of rural water supply in drought prone areas.

### 1.3.3 Water Demand Projections

For the Water Policy to be sustainable, it should be able to stand a test of time. It must therefore be supported by a rational understanding of the likely development of water demand in future. The stress by the Government for economic growth through rapid agricultural and industrial development combined with the anticipated growth in population is expected to increase the demand for water tremendously.

Although the country is generally considered to have abundant water resources, Zambia could experience severe water shortages in the near future due the localised growing demand on water for industrial and domestic use. This shortage could be exacerbated by pollution that would limit the use of the mobile and diminishing resource.

## CHAPTER 2: NATIONAL WATER POLICIES

### 2.1 WATER POLICY OBJECTIVE

*This national policy connotes a set of ideals, objectives or principles which the Government articulates with the primary purpose of bringing about or maintaining a desired state of affairs. As such, any policy must be dynamic and responsive to dictates of the prevailing situation. A policy must also legitimise detailed plans and strategies that are in harmony with the overall national development effort.*

*Given this background, Zambia's Water Policy is essentially aimed at promoting a sustainable water resources development with a view to facilitate an equitable provision of adequate quantity and quality of water for all competing groups of users at acceptable costs and ensuring security of supply under varying conditions. This entails establishing a well-defined institutional structure that will achieve the intended policy objectives.*

The specific policies for each sub-sector are described below:

### 2.2 WATER RESOURCES MANAGEMENT

The extensive water resources, in rivers, lakes and swamps, as well as in various aquifers, are sufficient to meet the present demands. Although water resources are abundant, shortages and conflicting demands have been experienced in some areas. These conflicts between various water users will continue to increase with further socio-economic growth. Currently, various plans for development of water resources to enhance hydro-power, agriculture, water supply and sanitation are prepared for without cognisance of the impacts on the water sector. This has contributed immensely to a fragmentation of water resources planning at national level.

In order to achieve sustainable water resources development, this policy emphasises a holistic approach to water management in which a comprehensive spectrum of demands are recognised and evaluated to assess their priority. The following Policy measures and strategies are necessary to achieve long-term sustainability of the water resources:-

**2.2.1 Recognising the important role of the water sector in the overall socio-economic development of the country by:**

- i) according high priority to the water sector in view of its paramount role to all social-economic activities; and
- ii) adequately supporting and promoting all developmental programmes in the water sector in order to improve the level of service delivery to other sectors.

**2.2.2 Vesting ownership of water resources in the country under the state control through:**

- i) identification of the weakness in the present Water Act with due regard to water resources that are currently under private ownership;
- ii) revision of the Water Act Cap 312 to incorporate water bodies such as ground water under private control to be under state control;
- iii) development of conventions and protocols in the case of internationally shared water resources in accordance with international legal principles known as the Helsinki Rules which embody the concept of best joint utilisation.

**2.2.3 Promoting water resources development through an integrated management approach by:**

- i) assessing the water resource potential from both surface and ground water sources;
- ii) building and strengthening the capacity of water resource management and monitoring in the Department of Water Affairs;
- iii) undertaking public awareness campaigns on development and conservation of water resources;
- iv) strengthening the water resources data bank in DWA to incorporate all developmental activities that have an impact on water resources;
- v) involvement of research institutions in the development of appropriate and environmentally sound technologies and ensure their adaptability to local conditions;
- vi) undertaking environmental impact assessments prior to implementation of any developmental project;
- vii) developing up to-date Water Master Plans.

**2.2.4 Defining clear institutional responsibilities of all stakeholders in the Water Sector for effective management and co-ordination by:**

- i) separation of water resources management responsibilities from those related to water supply;
- ii) concentration of water resources management activities in one line Ministry;
- iii) identification of weaknesses in the existing institutional structure regarding water resources management;
- iv) recommending reorganization measures for water resources management.

**2.2.5 Developing an appropriate institutional and legal framework for effective management of the water resources by:**

- i) strengthening capacity in water resources management activities in the DWA;
- ii) enactment of appropriate legislation to deal with water resources management at national level as well as those dealing with internationally shared water resources;
- iii) recognition of Environmental Protection and Pollution Control Act and any other pieces of legislation relating to water resources quality aspects.

**2.2.6 Promoting a state of disaster preparedness to mitigate impacts of extreme occurrence of water (flood and drought) through:**

- i) establishment of early warning system capabilities pertaining to floods and drought;
- ii) provision of financial resources to establish and strengthen research activities in climatic variations related to flood and drought occurrence;
- iii) effective co-ordination links between various institutions during emergence situations.

**2.2.7 Recognising water as an economic good by:**

drafting a water tariff legislation to cover the provision and allocation of water resources for consumptive and non- consumptive use.

## **2.3 WATER USE - QUALITY ASPECTS**

The overall water quality management objective is to maintain the fitness for use of water resources on a sustainable basis. However, it is important to note that water quality requirements of different user groups are seldom the same. In some instances they may even conflict. In discussing water user quality requirements, five main categories have been identified i.e domestic, industrial, agricultural, recreational, and management of natural environment.

### **2.3.1 DOMESTIC USE**

A water supply, whether treated or untreated shall be considered fit for domestic use if it provides a safe, aesthetically pleasing and reliable source on a sustainable basis. The criteria for determining water fitness for domestic use should evolve around the following aspects:

- i) human health;
- ii) aesthetic acceptability (colour, odour, clarity); and
- iii) economic implications.

### **2.3.2 INDUSTRIAL USE**

The fitness of water for industrial use should be determined by identifying water quality problems associated with:

- i) formation or presence of suspended solids which may interfere chemically with the process thus resulting in adverse effects on the quality of the product;
- ii) discolouring or staining of the product;
- iii) corrosion of hydraulic systems and processing equipment;
- iv) deposition of sediments, development of organic growth or generation of sludge within the hydraulic system;
- v) scaling of the hydraulic system and process equipment.

### **2.3.3 AGRICULTURE USE**

Three distinct uses are recognized under this category and these include water for irrigation, livestock watering and freshwater aquaculture. Each of these user categories require certain water quality specifications as :

- i) water shall be considered fit for irrigation if does not cause soil degradation; enhances high crop yield and profitability and ensures sustainability of production;
- ii) water for livestock watering and aquaculture shall be free from any contamination so as not to cause ill health problems to animals, aquatic life, consumers and users of the product.

### **2.3.4 RECREATIONAL WATER USE**

Water shall be considered fit for recreational purposes if it does not endanger the health and safety of water users coming into contact with it.

### **2.3.5 WATER FOR MANAGEMENT OF THE NATURAL ENVIRONMENT**

Water shall be considered fit for management of the environment if it meets the needs of the natural environment in a manner that is both sustainable and compatible with accepted environmental conservation principles.



## **2.4 RURAL WATER SUPPLY AND SANITATION (RWSS)**

Adequate clean water supply and sanitation are absolute necessities to the well being of life. The current situation is such that one-third of the rural population have access to safe drinking water and sanitation facilities. This means that a majority of rural population still remain at great risk of exposure to some water borne diseases. The problems of RWSS include the following: (a) lack of an adequate institutional framework; (b) absence of coordination amongst the many organisations involved in RWSS; (c) inadequate national policy on community participation; (d) ineffective Government policy on Operation and Maintenance; (e) low coverage of health educational programmes on the benefits from better water and sanitation; (f) absence of standardised pumping technology and water point designs; and (g) limited financial resources to rehabilitate and upgrade existing water RWSS infrastructure.

Given this background, the Policy supports measures aimed at increasing accessibility to safe drinking water and sanitation facilities for the rural population of Zambia. The overall National goal shall be:

### **universal access to safe, adequate and reliable Water Supply and Sanitation Services**

The following are the policy measures and strategies which are aimed at achieving this important goal:-

#### **2.4.1 Ensuring that RWSS Programmes are Community based through:**

- i) formation of Water Committees for effective coordination, management and mobilization of resources;
- ii) integration of community education, motivation, health and hygiene and water awareness programmes in development, operation and maintenance of RWSS programmes;
- iii) development of standardized educational materials and training of trainers.

**2.4.2 Developing a well defined investment programme for sustainable RWSS by:**

- i) assessing the costs for meeting water and sanitation needs;
- ii) establishing appropriate procedures of appraising and financing of RWSS projects;
- iii) according preference to rehabilitation and upgrading of existing facilities rather than construction of new RWSS schemes;
- iv) encouraging of investments in RWSS.

**2.4.3 Promoting appropriate technology and research activities in RWSS through:**

- i) standardisation of construction methods, equipment, procedures and other important aspects of appropriate technology;
- ii) consideration of user views in relation to choice of technology;
- iii) involvement of educational and research institutions like UNZA (particularly TDAU) and NCSR in development of appropriate technology;
- iv) establishment of an appropriate mechanism for data collection, processing, analysis and dissemination of vital information related to RWSS;
- v) provision of incentives to local manufacturers engaged in development and production of appropriate technology.

**2.4.4 Developing an emergency and contingency plans to mitigate impacts of drought and floods in rural areas by:**

- i) establishing early warning system capabilities pertaining to floods and drought;
- ii) provision of adequate resources to establish and strengthen research activities in climatic variations related to flood and drought occurrence;
- iii) effective co-ordination links between various institutions during emergence situations.

#### **2.4.5 Developing a cost recovery approach as an integral part of a RWSS which will ensure sustainability by:**

- i) encouraging user communities to contribute part of the investment cost of RWSS schemes. This contribution could be in terms of labour and locally available material to be used in the construction phase;
- ii) assisting the communities in the assessment of costs, establishment of revenue (fee and charges) collection mechanisms and determination of contributions towards operation and maintenance (O&M) of RWSS schemes.

#### **2.4.6 Development and Implementation of well articulated Training Programme by:**

- i) establishing a Human Resource Development Unit;
- ii) defining service targets and estimating manpower needs in the sector;
- iii) identifying occupational priorities and determining training requirements;
- iv) preparing an Instructors' Manual and Planning Guide for the training of Trainers.

### **2.5 URBAN WATER SUPPLY AND SANITATION (UWSS)**

In urban areas, the level of access to safe drinking water and adequate sanitation facilities are 70 per cent and 43 per cent respectively. This implies that slightly more than 50 per cent of urban population is susceptible to some water borne diseases due to poor sanitation. The problems being experienced in UWSS are similar to those highlighted under section 2.4. Additionally, urban areas are facing serious problems related to proliferation of illegal settlements especially on rich water aquifers and uncontrolled discharge of effluent into water sources. **However, Peri-urban areas considered to be legal settlements by Government shall be treated in the same manner as urban areas with regard to provision of water supply and sanitation facilities.**

In this light, the Policy is oriented to provide adequate, safe and cost effective water supply and sanitation services with due regard to environmental protection. The policy measures and strategies for achieving this goal are as follows:-

**2.5.1 Maintaining strategic reserves or stock pile of water treatment chemicals by:**

- i) assessing the quantity of water treatment chemicals and ensuring their availability at all times -including emergencies;
- ii) procuring and storing adequate chemicals under the safe custody of the GRZ and any other responsible organization;
- iii) monitoring quantity and quality of chemicals by GRZ and any other responsible organisation.

**2.5.2 Implementation of a well planned delinkage of water resources management from water supply and sanitation management through:**

- i) separation of water resources management responsibilities from those related to water supply;
- ii) concentration of water resources management activities in the MEWD;
- iii) conducting an inventory of existing urban water supply facilities, technical and financial resources, manpower and other WSS assets in the overall WSSS;
- iv) working out a time schedule, modalities and other administrative measures by the MEWD, local authorities etc, to facilitate the transfer of urban water supply schemes to local authorities.

**2.5.3 Development and implementation of a National Water Conservation Strategy by:**

- i) assessing water losses arising from defective installations or leakage through the water distribution systems;
- ii) rehabilitating and upgrading of UWSS schemes;
- iii) discouraging vandalism through anti-vandalism public awareness campaigns;
- iv) enactment and enforcement of necessary pieces of legislation to deter vandalism;
- v) charging cost effective water and sewerage tariffs;
- vi) introducing and enforcing penalties to defaulters.

**2.5.4 Creating an autonomous body to review and over see the tariff structure of UWSS sector by:**

- i) facilitating liaison between consumers and institutions responsible for provision of water and sanitation services vis-a-vis determination of a transparent tariff structure;

**2.5.5 Providing sufficient central government grants for operation and maintenance of UWSS schemes through:**

- i) formulation of Government policy on disbursement of central Government grants for operation and maintenance of water supply and sanitation schemes;

**2.5.6 Encouraging investment in the rehabilitation of UWSS schemes by:**

- i) giving priority to rehabilitation of existing water supply and sanitation infrastructure;
- ii) working out a mechanism through which government will determine sufficient level of investment for the rehabilitation of UWSS schemes.

**2.5.7 Carrying out investigations regarding regionalisation of operations and management of UWSS schemes by:**

- i) conducting a feasibility study in the regionalisation of operation and management of UWSS;
- ii) analyzing results of the feasibility in order to ascertain the viability of this approach.

**2.5.8 Formulating a well articulated training programme which addresses basic needs of the UWSS sector through:**

- i) assessment of training needs;
- ii) development and implementation of training programmes which are tailored to meet the requirements of both the public and private sectors;
- iii) use of existing training institutions rather than build new ones;
- iv) creation of a Human Resources Development unit.

**2.5.9 Enacting and enforcing Council by-laws and any other existing pieces of legislation to prevent water pollution by:**

- i) reviewing existing legislation pertaining to water pollution;
- ii) devising a mechanism of enforcing the revised Council by-laws to deter water pollution.

**2.5.10 Establishing a Water Sector Devolution Trust Fund to assist the transformation of local urban water and sanitation operations into commercial enterprises by:**

- i) setting up a Trust fund to facilitate the transformation;
- ii) outlining conditions for eligibility to this fund;
- iii) working out modalities for allocation and recovery of the Trust fund.

## 2.6 WATER TARIFFS

Water tariffs play a key role in water sector development through the impact on the usage of water in the economy. Efficient water tariff policies are a prerequisite for efficient resources allocation, guarantee reasonable returns to water suppliers, and encourage conservation of water resources. To the extent possible the tariffs should reflect both the cost and the true economic value of a commodity and thereby provide the right signals to consumers.

However, tariffs must be based on the principles of fairness and equity which entail:

- a) allocating costs among consumers according to the burden they impose on a delivery system;
- b) assuring a reasonable degree of stability and avoiding large tariff fluctuations from year to year;
- c) providing a minimum level of service to persons who are unable to afford the full cost;
- d) providing a real return on the investment.

It is also necessary that the water tariff mechanism should be simple and transparent. In the light of the foregoing, the following policy measures are made.

### 2.6.1 **Ensure that water tariffs take account of all the economic costs. The requirements for the different water uses are as follows:**

For consumptive uses of water such as domestic and industrial use, the pricing formula for setting tariffs should take into account the following:

- i) the replacement cost;
- ii) operational costs;

- iii) incentive for efficiency, reliability and environmental standards; and
- iv) return on investment.

In the case of consumptive uses of water such as irrigated agriculture and stock-watering and the non-consumptive uses including hydro-power generation, fishing, navigation, tourist attractions and recreational purposes, there is need for a pricing study to determine basis and extent of water rights fees and charges.



### **CHAPTER 3: INSTITUTIONAL AND LEGAL FRAMEWORK**

The water sector has numerous linkages to other non-water institutions in the country whose activities may be based or to a great extent rely on the services provided by water resources. In order to implement the policies outlined in this Policy document, it should be recognised that any institutional framework adopted for the water sector must be in line with the national development effort and fit within the existing government structure. Additionally, it is also imperative that the necessary legal reforms consistent with overall national institutional structure and the prevailing socio-economic environment be effected at both national and sectoral levels.

As regards institutional responsibilities for water resources management, the Department of Water Affairs in the Ministry of Energy and Water Development is the main public institution charged with responsibility of overall water resources management in the country. In addition, the other institutions involved with some aspects of water resources development include Department of Agriculture (dam construction for irrigation and stock-watering), National Council for Scientific Research (catchment studies and research on water potential and quality aspects), Environmental Council of Zambia (environmental management and enforcement of legislation), Water Board (water allocations), Departments of Fisheries, Natural Resources and Department of National Parks and Wildlife Services (development of water resources for fish, wildlife and environmental management) and Ministry of Tourism (water development for scenic and historic importance).

In the case of water supply and sanitation related services, several major institutions that are involved namely the National Commission for Development Planning (NCDP), which is responsible for resource mobilisation; the Department of Water Affairs in the Ministry of Energy and Water Development, which is responsible for rural and small township water supply; the Ministry of Health, which ensures the maintenance of acceptable sanitary and water quality standards for human consumption; the Ministry of Local Government and Housing (Urban water supply policy and investment projects); Local Authorities (mostly urban municipalities and small urban township councils), which are responsible for maintaining urban water supply and sanitation schemes; Ministry of Community Development and Social Welfare (identification of social welfare water and sanitation projects); Ministry of Works and Supply (running of water supply schemes at some public institutions); Ministry of Education (running of water supply schemes at some educational institutions); and Ministry of Environment and Natural Resources (effluent standards/pollution control). Additionally, on the Copperbelt, some Mine townships are serviced by water supply schemes run by the Zambia Consolidated Copper Mines Limited (ZCCM).

Because of this diffuse institutional structure and lack of clear guidelines and coordination links, a number of problems have arisen regarding the management of the sector. They include:

- i) inadequate Legislation for water resources regulation by the Government;
- ii) lack of clear distinction between sector responsibilities leading to a situation where the Department of Water Affairs combines water resource management and operation of water supply scheme responsibilities;

- iii) **poor coordination of planning and management activities among institutions in the sector leading to wastage of resources and duplication of effort;**
- iv) **declining investment and sub-economic tariff adjustments leading to financial hardships for water supply schemes;**
- v) **unsustainability of water supply schemes resulting from perception of water as an cost-free social good rather than as an economic one and inadequate community participation;**
- vi) **lack of adequate skills to ably manage and operate water supply schemes in the country; and**
- vii) **inadequate institutional and logistical capacity to put in place effective maintenance, material supply and cost recovery systems to operate water supply schemes.**

In view of the above problems, the Government has taken various steps, in collaboration with the donor community, to address the problems being experienced in the sector, especially those pertaining to institutional coordination and programme implementation. The steps taken includes the formation of a Task Force on Social Rehabilitation and Maintenance under which a Water and Sanitation Committee exists in order to address water supply and sanitation activities. The Task Force has been formed to accelerate the rehabilitation of run down infrastructure as a short term measure.

As a long term measure , an inter-ministerial coordination body, the Programme Coordination Unit (PCU) has been established administratively to spearhead the initiative regarding "Reorganisation of the Water Supply and Sanitation Sector". In the reorganization exercise the mandate given to the PCU include undertaking:

- i) **sector policy reforms;**
- ii) **clarification of sector responsibilities;**
- iii) **sector organisational reforms;**
- iv) **framework for planning, project development and operation and maintenance;**
- v) **proposals for institutional strengthening**

The PCU mandate is guided by the seven Water Supply and Sanitation Sector principles adopted by the Government of the Republic of Zambia. The sector principles are as follows:

- Principle 1. - **separation of water resources functions from water supply and sanitation;**
- Principle 2. - **separation of regulatory and executive functions within the water supply and sanitation sector;**
- Principle 3. - **Devolution of authority to local authorities and private enterprises;**
- Principle 4. - **Achievement of full cost recovery for the water supply and sanitation services (capital recovery, operation and maintenance) through user charges in the long run.**
- Principle 5. - **Human resources development leading to more effective institutions.**
- Principle 6. - **Technology appropriate to Local conditions and**
- Principle 7. - **Increased GRZ spending priority and budget spending to the sector**

### **3.1 THE ROLE OF THE WATER DEVELOPMENT BOARD**

The Water Development Board is a Statutory body (appointed under Cap 312 of the laws of Zambia). Presently it is under the MEWD and gets its technical support from DWA. The major function of the Water Development Board is to control the use of all surface water resources in the country by allocating water for different uses. With the proposed inclusion of control of groundwater in the Water Act, it will mean an increased workload and additional functions for the Water Development Board.

In order to streamline the monitoring and allocation of water for various uses by the Water Development Board, it is recommended that the following measures be effected:

- i) making the Water Development Board more autonomous;
- ii) strengthening the capacity of the Water Development Board so that it is able to administer its legal and monitoring functions.

### **3.2 THE ROLE OF THE ZAMBEZI RIVER AUTHORITY**

The Zambezi River Authority Act of 1987 ratified the Agreement between Zambia and Zimbabwe for the development of Zambezi waters along the common boundary. The Act provides for 50.50 sharing of benefits and costs principally for hydropower and calls for consent before substantial quantities of water from the Zambezi river are abstracted for uses such as irrigation. The MEWD is responsible for administering the Zambezi River Authority Act in Zambia.

### **3.3 ROLE OF GOVERNMENT**

The role of Government through the various institutions mentioned above will be defined within the on-going sector reorganisation.

### **3.4 LEGISLATIVE REFORM**

At present, there are various pieces of legislation which play a role in the water sector.

#### **3.4.1 Amendment of Existing Legislation**

The Water Act Cap 312 require amendment so that it complies with the proposed policies. The amendments should include the following:

- i) incorporate ground water and control its abstraction, use, supply and distribution;
- ii) prescribe mandatory measures to effected during periods of emergencies;

### **3.4.2 Enactment of New Legislation**

Under the prevailing economic environment which among others encourages private participation in the provision of services to the public, a new legislation should establish new board or empower the existing Water Board to perform the following functions:

- a) to regulate against monopoly tendencies of water companies;
- b) to receive representations from consumers and other interested parties on water tariff adjustments and levels;
- c) to ensure that water tariff adjustments and levels are justified;
- d) to be an Appeals body for individuals and institutions not satisfied with services provided by any water company;
- e) to be an arbiter between the various stakeholders in the water sector in general and specifically to ensure that the interests of water users and the public are safeguarded.

### **3.5 RESOURCE MOBILISATION AND DONOR FUNDING**

While Government will endeavour to provide resources for the implementation of this Policy, every effort will be made to encourage participation from the private sector, Non-governmental organisations and other service organisations.

The role of the donor community in supplementing Government efforts is particularly critical to the development of the water sector as evidenced by their contribution to the sector. Water infrastructure development, maintenance and rehabilitation are capital intensive requiring substantial financial resources.

### **3.6 PLAN OF ACTION**

To ensure that the implementation of this Policy is systematic, a detailed Plan of Action should be worked out by DWA. The basis for the plan are strategies identified in the Policy.

## REFERENCES

1. This Policy Document is compiled from recommendations and Papers presented at the water resources management and water supply and sanitation workshops.
2. GRZ/IUCN "The National Conservation Strategy for Zambia, 1985". Avon Litho Limited, U.K.
3. GRZ/GTZ/NORAD "Reorganisation of the Water and Sanitation Sector - Outline of a Programme Document to PCU, March 1993". (R. Sultzer, U. Bartz)

# APPENDICES

**APPENDIX I:  
PARTICIPANTS TO THE WATER RESOURCE MANAGEMENT  
WORKSHOP**

Date of Workshop: 5th October, 1993

Venue: Zambezi Lodge, Siavonga

<u>NAME</u>	<u>ORGANISATION</u>
1. R.C. Sampa	Ministry of Energy and Water Development
2. R.B. Khuti	Department of Water Affairs
3. J.J. Makwaya	Department of Water Affairs
4. V N Kasimona	Department of Water Affairs
5. P. Meuselwitz	G T Z
6. A. Hussen	Department of Water Affairs
7. I J Mbewe	C M M U
8. H. Hynne	Department of Water Affairs
9. E.C Sichone	Ministry of Energy and Water Development
10. N.B Chishimba	Ministry of Energy and Water Development
11. J M Kasonde	National Council for Scientific Research
12. S.T. Chisanga	Ministry of Health
13. F C. Chiwele	Ministry of Local Government and Housing
14. B.M Chiwala	Ministry of Energy and Water Development
15. O.C Mwansa	Department of Water Affairs
16. N.B Mwansa	N C S R
17. P Chola	Department of Water affairs
18. P M Choseni	U N Z A
19. S. Skarstol	Department of Water Affairs
20. C.B. Mwasile	Z E S C O
21. O.L. Sangulube	Department of Water affairs
22. E.M. Mwelwa	Department of Water affairs
23. L.H.L. Chandi	Ministry of Energy and Water Development
24. M.M. Mulipukwa	Department of Water affairs
25. S.F Shisala	Department of Water affairs
26. P.A. Zulu	Department of Water Affairs
27. C. Chileshe	Department of Water Affairs
28. M.S. Muryendekwa	Department of Water Affairs
29. S.M. Chilufya	Department of Water Affairs
30. F.M. Mulenga	Department of Water Affairs
31. L. Muchanga	U N D P
32. M. Anderson	U N I C E F

## **APPENDIX II: PARTICIPANTS TO THE WATER SUPPLY AND SANITATION WORKSHOP**

Date of Workshop: 27th October, 1993

Venue: Rainbow Lodge, Livingstone

<b><u>NAME</u></b>	<b><u>ORGANISATION</u></b>
1. G.G. Saidi	Ministry of Energy and Water Development
2. R.B. Khuti	Department of Water Affairs
3. J.J. Makwaya	Department of Water Affairs
4. V.N. Kasimona	Department of Water Affairs
5. S.B. Chiwala	Water Board
6. A. Hussen	Department of Water Affairs
5. T.N Ngwira	Water Board
6. P.P.L.M.Kimena	Department of Water Affairs
7. F. Mushibwe	N C D P
8. M. Muya	U N Z A
9. L Sumpa	National Heritage Conservation Commission
10. O.C. Mwansa	Department of Water Affairs
11. J.H. Chilo	Water Board
12. M.K. Samani	Department of Water Affairs
13. E.C Sichone	Ministry of Energy and Water Development
14. W.K. Sakala	Meteorological Department
15. J.M Kasonde	National Council for Scientific Research
16. B.B. Nyekele	Building Department
17. N.B. Chishimba	Ministry of Energy and Water Development
18. A. C. Daka	J I C A
19. F N Masialeli	National Energy Council
20. G.K. Nang'omba	Zambia Sugar Company
21. S.T. Chisanga	Ministry of Health
22. W.E. Longwe	Ministry of Education
23. G.B Chipeta	Meteorological Department
24. H. Hynne	Department of Water Affairs
25. P. Lubambo	Lusaka City Council
26. D.D. Mwanza	U N Z A
27. F.C. Chiwele	Ministry of Local Government and Housing
28. S. Skarstol	Department of Water Affairs
29. P. Sibaziya	N C D P
30. B.M. Chiwala	Ministry of Energy and Water Development
31. P. Meuselwitz	G T Z
32. N.B. Mwansa	N C S R
33. P. Chola	Department of Water affairs
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35.	H. Sindowe	Z C C M
36.	L. Aongola	Ministry of Environment & Natural Resources
37.	S.Kalinda	Zambia National Tourist Board
38.	J.E. Banda	Department of Water Affairs
39.	F.K.Shalwindi	National Heritage Conservation Commission
40.	E. J. Hoekly	Zambia National Farmers Union
41.	D. Kabumu	Africare
42.	G. Hendricks	Lusaka Water and Sewerage Company Limited
42.	W. Shawa	Lusaka Water and Sewerage Company Limited
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