



# **The Institutional Landscape for Water Resource Management in Zambia**

*Draft Summary Report*

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## Table of Contents

1.0 Introduction.....	3
2. Strategic context of water resource management in Zambia .....	3
2.1 Overview.....	3
2.2 Water in national and sector policies, strategies and plans .....	5
2.3 Key Donor initiatives related to WRM .....	8
3. Policies and agreements relating to water resource management.....	10
3.1 National Water Policy 2010.....	11
3.2 National Environment Policy 2007.....	11
3.3 Other related sectoral policies.....	12
3.4 Multilateral Environmental Agreements.....	13
4.1 Water Resources Management Act 2011.....	14
4.2 Water Resource Management Regulations .....	14
4.3 Environment Management Act of 2011 .....	15
4.4 Land Act.....	16
5.1 Sectoral responsibilities for WRM.....	16
5.2 Responsibilities within the water sector.....	17
5.4 Roles and functions within water supply and sanitation (WSS).....	19
5.6 Other actors relevant to WRM .....	20
6.1. Establishing water user associations .....	21
6.2 Procedure for Environmental Impact Assessment .....	21
6.4 The Water Pollution Control (Effluent and Waste Water).....	23
6.5 Procedure for issuing and monitoring Water Use Permits.....	23
6.6 Procedures for disaster management (Floods and Drought) .....	23
6.7 Procedures for reporting and resolving water conflict.....	24
References.....	24

## **1.0 Introduction**

This report provides an overview of the water resource management (WRM) institutional landscape in Zambia and details guiding policies, legal and regulatory frameworks, organisational roles and responsibilities and procedures intended to promote .....

It is intended to feed into the process for developing and eventual implementation of the Zambia Fair Water Futures Phase II work to be delivered by the Zambia Country Water Partnership with support from Water Witness International (WWI) and ShahidiwaMaji (SwM) with funding from United Kingdom Department for International Development (UK-DFID). The work will take place between July 2015 and September 2016. The main components of the project are:

- Activating water security for vulnerable communities ;
- Private sector engagement in water stewardship;
- Budget and resource tracking in water resources management;
- Evaluation and outreach.

## **2. Strategic context of water resource management in Zambia**

### **2.1 Overview**

Zambia has experienced rapid economic expansion the last decade but remains challenged in ensuring broad based and sustainable economic growth. The main sectors driving growth include driven by mining, agriculture, transport construction and communication. Investments in thecopper industry and related infrastructure have helped to spur economic growth to about sixpercent since 2000. Impact on poverty reduction, especially rural poverty, has however been limited.

Water plays a critical role in the economic development of Zambia where both rural and urbancommunities depend on it for agriculture, fishing, livestock watering, domestic consumption, andenergy production. Hydropower is the main source of energy for Zambia's economic sectors. Agriculture remains the leading sectorin terms of food security andpoverty reduction.

Frequent droughts and floods,hydrological variability and seasonal water shortages, compounded by growing water demandfrom the major sectors of the economy and limited water infrastructure pose a seriousconstraint on the medium and long-term growth prospects for the country. The country is highly dependent on rain-fed agriculture and suffers from reduced crop yields when droughts occur. Rainfall dependent agriculture which contributes 18-20% to national GDP is one of the driving forces for the anticipated economic growth

required to reduce poverty.<sup>1</sup> It provides livelihood for more than 50% of the population and is the principal source of income and employment for women in rural areas who constitute 65% of the total rural population<sup>2</sup>. Over the past three decades, climate variability has cost Zambia an estimated US\$ 13.8 billion or a loss of economic growth equivalent to 0.4% annually and variability in rainfall alone could keep an additional 300,000 more Zambians below the poverty line<sup>3</sup>. The Western and Southern Provinces of the country (and part of the Northern, Central and Western Provinces) are the most vulnerable areas to climate variability<sup>4</sup>. Assessments indicate that the predicted shortening of the growing season will negatively impact key crop varieties in some areas of the country<sup>5</sup> and the decline of rain-fed maize production by 80% by 2100 as a result of climate change.

Similarly climate variability, specifically drought, poses more serious risk to hydropower generation than any other factor. Increases in drought occurrences resulting in water deficiency which in turn affect hydropower generation are expected to increase load shedding. Currently Zambia is facing critical shortage in hydro-power resulting from reduced rainfall that has affected many sectors of the economy.

Mitigating the negative impacts of floods and droughts through development of a sound infrastructure platform to secure the productive use of water resources is central to continued economic development and safeguarding sustainable livelihoods. The lack of infrastructure in the water sector currently exposes the economy to significant risks that have the potential to undermine the recent gains.

The relative abundance of water at the aggregate national scale contradicts the fact that some basins such as the Kafue River Basin are already under increasing pressure, with the potential to undermine growth and development. The Kafue River catchment is home to 40 percent of the national population supports approximately 80 percent of the country's total area under irrigation and generates just over 50% of the country's hydropower.

Zambia faces significant water resources management challenges related to maintenance of water quality at sources and supply of adequate quantity and quality in both urban, peri-urban and the rural setting; inadequate sanitation; climate variability; recurring droughts and floods, and chronic underinvestment in water infrastructure.

In 1990, 50% of the total population had access to an improved water source which rose to 58% in 2004 while sanitation improved from 44% in 1990 to 55% in 2004. National urban

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<sup>1</sup>Ministry of Finance and National Planning, 2006. Fifth National Development Plan, 2006-2010.

<sup>2</sup>Ministry of Agriculture and Co-operatives, 2004. National Agricultural Policy, 2004-2015 p.2.

<sup>3</sup>World Bank 2009. Managing Zambia's Water for Sustainable Growth and Poverty Reduction. A Country Water Assistance Strategy for Zambia, June 2009

<sup>4</sup>Government of the Republic of Zambia, 2011 Zambia: Strategic Programme for Climate Resilience (SPCR) Prepared for the Pilot Programme for Climate Resilience (PPCR) Ministry of Finance and National Planning, Lusaka, p.14.

<sup>5</sup>Maize is the Zambian staple accounting for 90% of the caloric intake.

water coverage currently stands at 83.5% while sanitation is at 57.3%<sup>6</sup>. In the rural areas water supply and sanitation coverage stand at 53% and 23% respectively.

The challenges of expanded provision of safe water and sanitation include low technical and managerial capacities among provider institutions; inadequate and ineffective community participation and stakeholder involvement in the design, operation and management of sanitation facilities; a scarcity of appropriate low-cost, standardized sanitation technologies; and the proliferation of unplanned and illegal settlements that make the provision of sanitation difficult.

The experiences of sectors that use water underscore the importance of water security social and economic development in Zambia. Water is linked to security in several ways-through the growing population and associated lifestyles and their impact on water quality, heightened demand for water and, threats to health from water quality degradation. These outcomes are most serious in urban areas but also occur in the rural areas where clean water is already insufficient. The greatest challenge to water security is failure to develop the water resources from chronic underinvestment .Overall government contribution to the sector has been very low, often below 10%, with more than 90% of capital investments coming from donors.<sup>7</sup>

## **2.2 Water in national and sector policies, strategies and plans**

### *The National Long-term Vision 2030*

Accelerating economic growth and reducing poverty for the 13.5 million Zambians is the Governments central development challenge articulated in the country’s first long term plan the “Vision 2030”. The Vision 2030 presents desirable long-term socio-economic indicators intended to shift the country into middle-income status. The “Vision 2030” long term goal for water include significant increases in access for the population to clean water and adequate sanitation and fully integrated and sustainable water resource management.

### *Sixth National Development Plan/Realigned Sixth National Development Plan*

The Sixth National Development Plan (SNDP) outlines Government’s medium-term strategy (2011-2015) for an all-inclusive development agenda. This is reinforced in the Realigned Sixth National Development Plan (2011-2016). The SNDP goal is “*sustained economic growth and poverty reduction*”<sup>8</sup>. After almost a decade of economic growth, with growth rates averaging 6.5 percent, close to two thirds of Zambians still live in poverty persistent in the rural areas. Some SNDP indicators for assessing movements in poverty levels are listed in given in Table 1. Access to water plays a crucial role achieving the performance indicators

### **Table 1: SNDP key performance indicators**

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<sup>6</sup>National Water & Sanitation Council 2013, Urban and Peri-Urban Water Supply and Sanitation Report, Lusaka, p.2.

<sup>7</sup>Water Aid Zambia. 2009. Country programme evaluation. [www.wateraid.org](http://www.wateraid.org) , accessed 24<sup>th</sup> August 2013.

<sup>8</sup> Government of the Republic of Zambia, *Sixth National Development Plan (2011-2015)*, Ministry of Finance and Planning, Lusaka, p.i.

<ul style="list-style-type: none"> <li>• Rate of Growth in :Agriculture;Energy;Construction;Tourism</li> <li>• Total national electricity generation (MW)</li> <li>• Percentage of Households with access to electricity (Zambia/Rural/)</li> <li>• Hectares of land under irrigation</li> <li>• Forest Plantation Expansion (Ha)</li> </ul>	<ul style="list-style-type: none"> <li>• Proportion of the population (male; female) with access to safe water supply (%): rural; urban</li> <li>• Proportion of Urban population: (male: female) with access to adequate sanitation (%) rural; urban</li> <li>• Proportion of Households living between 0-5 km of a health facility)</li> <li>• Life Expectancy at birth: male; female</li> <li>• Infant Mortality Rate (per 1000)</li> <li>• Maternal Mortality Ratio (per 100,000)</li> </ul>
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Source: GRZ 2011, p.13

Table 2 projects a sustained average growth rate of greater than 7% over the SNDP implementation period required to achieve the indicated poverty targets.

**Table 2: Poverty targets**

Key Performance indicators	Baseline year	Targets	
		2011	2011-2015 average
<b>Macroeconomics</b>			
Gross Domestic Product Growth Rate %	2009; 6.3	>7	> 7
<b>Poverty</b>			
Headcount Poverty	2006: (59.6)	-	2015: <38
Extreme Poverty	2006: (37)	-	2015: <29*
Rural Poverty	2006: (77)	-	2015: <50

Source: GRZ, 2011, p 23 \*Based on the MDGs target of halving extreme poverty by 2015 based on the 1991 poverty figures;

The SNDP water sector goal is “promoting sustainable water resources development and sanitation”<sup>9</sup> where the strategic focus is to “provide water and sanitation infrastructure and develop skills to ensure effective water resource management and the efficient provision of reliable and safe water and sanitation services”<sup>10</sup>. This is to be achieved through six separate programs-Water Resources Infrastructure Development; Climate Change Adaptation and Mitigation; Research and Development; Integrated Water Resources Management; National Rural Water Supply and Sanitation Programme (NRWSSP); National Urban Water Supply and Sanitation Programme (NUWSSP); including support to the development and allocation of water resources to the priority sectors for economic development, including agriculture, livestock and fisheries, tourism, mining, manufacturing, commerce and trade and energy. The Integrated Water Resources Management and Efficiency Implementation Plan (2007-2030)supports the development and poverty reduction agenda of the SNDP.

### *Millennium Development Goals*

The Millennium Development Goals set by the international community also form an integral part of national development priorities, with access to safe drinking water as one of the 18 objectives. Zambian human development effort places water especially access to safe

<sup>9</sup>Government of the Republic of Zambia, Sixth National Development Plan (2011-2015), Ministry of Finance and Planning, Lusaka, p.103.

<sup>10</sup> Ibid.

drinking water at the centre of achieving all the Millennium Development Goals (MDGs). The management of water resources therefore deserves critical attention. Zambia has made progress in increasing access to improved drinking water since, but the rate of progress is too slow to achieve the MDG target of 25.5 percent by 2015<sup>11</sup> (GRZ/UNDP 2013).

#### *National Adaptation Plan of Action*

The National Adaptation Programme of Action on Climate Change (NAPA) was formulated by the Government of Zambia to enable the effective identification of national climate change vulnerabilities and adaptation needs, as part of the process of the United Nations Framework Convention on Climate Change (UNFCCC) for Least Developed Countries (LDCs).

The NAPA identifies 39 urgent adaptation needs and 10 priority areas within the sectors of agriculture and food security (livestock, fisheries and crops), energy and water, human health, natural resources and wildlife. The NAPA identifies five vulnerable sectors in Zambia, the primary one is the agriculture sector because the country still is completely dependent on rain-fed agriculture. The other vulnerable sectors are the water and energy sectors, the natural resources, wildlife and forestry sectors, and the human health sector. All these sectors are very susceptible to shifting climatic extremes. Also the economic sector is very vulnerable to extreme climate variations, which are causing increased poverty for the country. The NAPA identifies recurrent droughts and floods as cause of crop failures through water stress or water logging, water erosion, or shortening of the growing season in drought years. Other impacts include non-reliable access to water for household and animals and decreased or increased river flows. Secondary impacts are malnutrition and diarrhoeal diseases resulting from crop failure and decreased access to drinking water.

The NAPA recognises key national policies, strategies and programmes relevant to the NAPA process and where synergies could be sought. Further the NAPA document discusses the level of relevance to NAPA, existing programmes that may integrate Climate Change Adaptation may have. The sectors assessed are: agriculture, fisheries, human health, and natural resources but not the water sector.

The NAPA also recognizes potential barriers to implementation including: lack of financial resources; lack of clear and specific legal and policy frameworks; lack of institutional, system and individual capacities and inadequate public awareness.

#### *National Climate Change Response Strategy 2010*

The strategy's vision is a prosperous climate change resilient economy and its mission is to ensure that most vulnerable sectors of the economy are climate proofed, and sustainable development achieved through the promotion of low carbon development pathways. The approach in the NCCR is to align its achievements to the overall fulfilment of the National Long-term Vision (NLTV). The goal of the NCCR is ensure climate change mainstreaming into economic viable and vulnerable sectors of the economy. For the water sector the main

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<sup>11</sup> GRZ/UNDP 2013 Millennium Development Goal Progress Report 2013.

objective is to ensure the sustainable management of and resilience of water resources under changing climate.

### *Integrated Water Resources Management /Water Efficiency Plan*

The Integrated Water Resources Management /Water (IWRM/WE) Implementation Plan is an inter-sectoral plan with proposed interventions to support the four main priority drivers of Zambia's economic development identified in Fourth National Development Plan 2007-2010 as agriculture, tourism, mining and industry/manufacturing. Being a national level plan, it adopts an integrated approach, intended to lay a foundation for enhanced planning, development and management of water resources and for their utilisation. The intention is to advance the development objectives identified in the National Long Term Vision 2030 as well as making progress towards meeting the Millennium Development Goals (MDG's).

The main IWRM change areas identified by stakeholders were providing enabling policies; legislation; financing and incentive structures; strengthening the institutional framework and institutional capacity building; putting in place IWRM instrument ( e.g water resources, assessment; conflict resolution etc.); and developing infrastructure for water resources management and development. These areas fall within the national development priorities.

The main change areas have been organised into four strategic programmes that include: water resources management; water resources infrastructure development; water supply and sanitation, and monitoring, evaluation and capacity building which are also the IWRM/WE Plan priorities.

### **2.3 Key Donor initiatives related to WRM**

*National Water Resources Development Project*-funded by the World Bank(2014-2019): The project aims to enhance capacity at national and regional level to address the challenges of water resources management in Zambia, addressing the infrastructure deficit and strengthening the institutional capacity for water resources management and development. It comprises three components intended to support the following:

- a) Water resources management:
  - construction, rehabilitation and upgrading of hydro-meteorological and groundwater monitoring networks;
  - review and upgrading of operating procedures and processes to enhance the capacity of hydro-meteorological and groundwater information management systems and functions; enhancing institutional partnerships and collaborations;
  - review, upgrading and implementation of the national hydrological and hydrogeological information management systems, including the integration of spatial and remotely sensed data;
  - development of flood forecasting and early warning systems;
  - preparation of consolidated catchment and basin-level water resources development plans and carrying out associated strategic water assessments, including groundwater; and (g) implementation of arrangements and measures



for water resource allocation, licensing, revenue and compliance monitoring and management.

b) Water Resources Development:

- development and rehabilitation of small scale water resources infrastructure
- updating and climate screening the 1995 Dam Development Master Plan to identify a series of priority investments for further preparation;
- preparation of studies in support of a proposed pipeline of future medium and large scale water resource investments;
- supporting environmental and social assessments for future potential water resource investments;
- carrying out community mobilization and sensitization;
- development and implementation of a national dam safety monitoring program; and
- development and implementation of a national managed groundwater development program

c) Institutional Support:

- support for the set-up of institutions established under the Water Resources Management Act and implementation of their functions;
- development of rules, plans, strategies and carrying out of studies, as needed, for the implementation of the Water Resources Management Act to ensure the sustainable and equitable development of water resources;
- building capacity for negotiations, conflict resolution, monitoring and compliance with international water instruments;
- enhancing inter-agency coordination; and
- financing of costs associated with project management, coordination and oversight

*Integrating Climate Change in Water Resources Monitoring Project*-This project is supported by the German Technical Cooperation-Government of the Republic of Zambia, Water Sector Reform Programme. It is designed to support and advise the WRMA (Catchment Councils, Sub-Catchment Councils and Water User Associations) in building and using the water resources information system to incorporate climate change in water resource plans and allocations, and to establish the necessary cooperation partnerships with other actors. The main objective is to integrate climate change into water resources management. Key result areas include:

- a) setting up a functional national water resources information system
- b) Incorporation of the effects of climate change based on the water resources information system into the national water resources management strategy.
- c) The development of at least a water resources management plan for at least one water catchment area defines gender-differentiated effects of climate change as well as gender-equitable adaptation measures
- d) The allocation of water permits takes climate change into account based on IWRMIS Information

- e) Regular data exchange between DWA/WRMA and ZMD as well as between DWA/WRMA and SADC is carried out as agreed.

*Lusaka Water Supply, Sanitation and Drainage (LWSSD) Project* -The project is implemented by the Millennium Challenge Account -Zambia established as company limited by Guarantee under the laws of Zambia and designated by the Government of the Republic of Zambia as the Accountable Entity to implement the LWSSD Project, funded through the Compact Agreement signed between the Millennium Challenge Corporation and the Government of the Republic of Zambia. The Lusaka Water Supply, Sanitation and Drainage project has three sub-projects:

- a) Water Supply -involves the rehabilitation of the Iolanda Water Treatment works in Kafue as well as the pipeline. The rehabilitation works are expected to benefit a total of 860,000 people. A number of communities in Lusaka will also receive the interventions; Kwamwena, Ndeke-Vorna Valley, Kamanaga, Mtendere, SOS East, Ng'ombe, Mtendere.
- b) Sanitation -includes construction of sanitation networks in Mtendere in order to get rid of the pit latrines in the area which are a threat to ground water. To this effect, the Kaunda Square Stabilization Ponds, see Annex II, will also be rehabilitated in order to make them more efficient as well as add the extra over 12000 households from Mtendere.
- c) Drainage - focused on addressing flooding in areas stretching from the southern part of the city, through the Central Business District (CBD) up to the north end of Lusaka.

### **3. Policies and agreements relating to water resource management**

The key policies providing guidance to water resources management and development are the Long Term National Vision 2030 (LTNV) (Republic of Zambia, 2006) and the National Water Policy (Ministry of Energy and Water Development, 2010). Implementation of policy measures is through five yearly national Development plans (NDPs) with the current one being the Sixth National Development Plan (SNDP) (Ministry of Finance and National Planning, 2011).

The long term vision and goals/targets for water resources as stated in the National Vision (2030) are indicated in Box 1.

Box 1: Water and sanitation sector vision and goals

**Vision:** Clean and safe water supply and sanitation for all by 2030

**Goals/ Targets:**

- i. Improve access to appropriate, environmental friendly sanitation by all Zambians;
- ii. Attainment of 80% access to clean water supply to all by 2015 and 100% by 2030;
- iii. Attainment of 68% access to sanitation to all by 2015 and 90% by 2030; and
- iv. Fully integrated and sustainable water resource management

### 3.1 National Water Policy 2010

The NWP is a government approved document whose aim is to improve the management of water resources by establishing institutional coordination and defining roles responsibilities of various stakeholders. The policy addresses water issues in most key sectors of the economy and strives to address cross-sectorial interests, through water resources planning. It embraces the various sector policies and is cognisant of principles of Integrated Water Resources Management, where stakeholder participation and decentralization are the two main thrusts. the NWP vision is *“To optimally harness water resources for the efficient and sustainable utilisation of this natural resource to enhance economic productivity and reduce poverty.”*<sup>12</sup> The major outcome expected from implementation of the NWP is *“to improve the management of water resources, institutional coordination and defined roles and responsibilities”*. The NWP embraces eleven (11) contemporary principles of water resources management (Table 3) and endeavours to contribute to the daunting challenge of reducing poverty.

**Table 3: Guiding principle in the National Water Policy**

<ul style="list-style-type: none"> <li>• Water is a basic human need;</li> <li>• Government shall be the trustee of the nation's water resources and will ensure that water is allocated equitably, protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, in the public interest while promoting environmental and social values and protecting Zambia’s territorial sovereignty;</li> <li>• Water resources shall be managed in an integrated manner;</li> <li>• Domestic and non-commercial needs and the environment shall enjoy priority of use of water;</li> <li>• There shall be equitable access to water;</li> <li>• Water has a social value and all domestic and non-commercial use of water will not be required to obtain a water permit. ;</li> <li>• Water has an economic value and the cost of facilitating its use has a significant administrative cost element and this will be reflected in the fees for water permits for the use of water resources from economic purposes;</li> </ul>	<ul style="list-style-type: none"> <li>• There shall be equity between both gender in accessing water resources and, in particular, women shall be empowered and fully participate in issues and decisions relating to sustainable development of water resources and, specifically, in the use of water;</li> <li>• Efforts to create wealth shall be reflected in all decisions made in relation to the use of water;</li> <li>• Location of a water resource on land shall not itself confer preferential rights to its use;</li> <li>• The basic management unit shall be the catchment in recognition of the unity of the hydrological cycle; and</li> <li>• Zambia’s water resources shall be managed to promote sustainable development and protect its territorial sovereignty</li> </ul>
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The NWP promotes efficiency and equity in water use consistent with inter-generational social, economic and environmental needs. Twelve policy (12) objectives and associated measures in relation to food and agriculture, fisheries, tourism, water supply and sanitation, wildlife, mining, industry, environment, energy, land, national heritage, and transport are articulated in the NWP

### 3.2 National Environment Policy 2007

The Policy’s main aim is to promote sustainable environmental protection. It provides a framework for the management of the environment and natural resources in order to protect future generations. The NPE recognises six main areas of environmental concern - deforestation; wildlife depletion; land degradation; heritage destruction and loss of spiritual and cultural values; air pollution; and inadequate management of water resources, water

<sup>12</sup>Government of the Republic of Zambia, 2010. National Water Policy 2010, Ministry of Energy and Water Development, p.28.

pollution and inadequate sanitation. The Policy hopes to address some of the main challenges facing Zambia, such as: climate change, deforestation, land degradation, loss of biological diversity, wildlife depletion and environmental pollution. The policy objective for water, recognised as a key economic sector, is the efficient and effective use and management of water so as to promote its conservation and availability. Integrated river basin management is an identified strategy.

### **3.3 Other related sectoral policies**

Other policies related to water resources include the following:

- i) The National Agriculture Policy, 2004: The policy objective is to facilitate and support the development of a sustainable and competitive agricultural sector that assures food security at national and household levels and maximizes the sector's contribution to Gross Domestic Product (GDP). Promoting sustainable and environmentally sound agriculture practices and irrigation development are some of the strategies identified in achieving the objectives of the NAP.
- ii) Irrigation Policy and Strategy, 2004-2015: The overall objective is to attain “a well regulated and profitable irrigation sector that is attractive to both private investors and Zambia’s development partners.” Some specific objectives are to support infrastructure for bulk water supply (water development), as well as reviewing the water rights system and tariffs.
- iii) National Wetlands Policy, 2001: The policy emphasises conservation and wise use of wetlands in view of the fact that these areas are increasingly targeted for various ecosystem products and services to support human well being
- iv) Disaster Management Policy, 2005: The goal is “to strengthen national capacities for effective disaster preparedness, response, mitigation, restoration and prevention in order to protect lives and livelihoods, property, environment and the economy at large. Irrigation is a specific strategy to mitigate against droughts.
- v) National Energy Policy, 2008: The main objective is “to create conditions that will ensure the availability of adequate supply of energy from various sources, which are dependable, at the lowest economic, financial, social and environmental cost consistent with national development goals.” Rural electrification, by extending the existing grid or implementation of mini and micro-hydro schemes is seen as a means of facilitating industrial production in rural areas. For instance farming areas undertaking irrigation would be opened up once appropriate and reliable energy supplies are available.
- vi) National Decentralisation Policy, 2002: The vision is “to achieve a fully decentralised and democratically elected system of governance characterised by open, predictable and transparent policy making and implementation processes, effective community participation in decision-making, development and administration of their local affairs while maintaining sufficient linkages between the centre and the periphery”. Under this system of governance, the district is the focus of development and service delivery. Some functions related to water and land management to be performed by District Councils include infrastructure development and maintenance, planning and

implementation of development projects and programmes, mobilisation of local resources, land allocation and utilization, and agriculture extension services.

- vii) National Forestry Policy, 2009: The specific objectives is “to ensure sustainable management of forest ecosystems and biodiversity application through scientific and indigenous technical knowledge” with specific strategies that supports water and land management to do with “promoting a land use system that ensures the protection of headwaters, river basins and terrestrial resources; and facilitating sufficient and sustainable allocation of land between major competing uses and sectors such as agriculture and energy”.
- viii) National Gender Policy, 2000: The goal is: “to eliminate gender imbalance that places a heavier burden of poverty on women at the household, community and national levels”. It outlines specific measures to address the problems associated with poverty particularly women and men’s poor access to various productive resources, which includes among others water and land management.

The draft Land Policy (2007) is pending formal adoption. The revised Mineral Resources Development Policy of promotes environmentally friendly mining. Of concern is the promotion of mining activities in national parks and the resultant impact of ecosystems therein, including water systems.

### **3.4 Multilateral Environmental Agreements**

Zambia has signed and ratified several international instruments that directly relate to water and environmental management. These include:

- The Convention on Wetlands of International Importance Especially as Water Fowl Habitat, 1971;
- The Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972;
- The Convention on Biological Diversity, 1992;
- The United Nations Framework Convention on Climate Change, 1992;
- The United Nations Convention to Combat Desertification, 1994;
- The United Nations Convention on the Law of Non-Navigational Uses of International Watercourses, 1997 ;
- The Convention on Sustainable Management of Lake Tanganyika, 2003;
- The Revised Protocol on Shared Watercourses in the Southern African Development Community, 2000 and;
- The Zambezi River Course Commission (ZAMCOM) 2013.

## **4. Legislation relating to water resource management**

## **4.1 Water Resources Management Act 2011**

As has already been mentioned the principle legislation for water resources management is the Water Resources Management Act No. 21 of 2011 which governs overall water resources management. The eight (8) principles below form the basis for management:

- Managing water resources in an integrated and sustainable manner;
- Recognition that water is basic human need and that domestic and non-commercial use take first priority in allocation;
- Environment uses water and takes second priority in allocation;
- Equitable access to water ;
- Recognition of the economic and social values of water;
- Equity between both genders in access to water resources;
- Recognition of the catchment as the basic unit of management; and
- Taking in account climate change and adaption in water resources management.

Key provisions include a decentralised water resource management system that encompasses the basin, catchment, sub-catchment and water user level. Six main river catchments are recognised for which planning, water allocation and regulation and shared water course and shared water resources management activities will be undertaken. The Act establishes a water resources development trust fund intended to enhance water infrastructure financing and promotion of public private partnerships. The Act recognises the centrality of water to the activities of many sectors and the impact in turn of other sectors on water resources. With these provisions, the Act gives backing to the aspirations of the NWP.

## **4.2 Water Resource Management Regulations**

The WRM Act of 2011 provides for the formulating Statutory Instruments (SI) necessary to implement and administer the requirements of the principal Act. New SI's are in the process of being developed and these will include (not limited to):

- Catchment/sub-catchment delineation, constitution of catchment/sub-catchment councils and water user associations
- Catchment management planning (which includes water allocation)
- Declaration of water shortage areas
- Information and water monitoring
- Water use- in relation to domestic or non-commercial purposes; environmental purposes; training and research purposes; municipal purposes; agricultural purposes; industrial purposes; hydro-electric purposes; mining purposes; navigational purposes; and supply of water in bulk; including groundwater regulation
- Water User charges and fees
- Licensing of contractors and drillers
- Construction of water works (including dam works)
- Declare an emergency relating to a specific area of Zambia or the spillage of harmful or toxic substances

### 4.3 Environment Management Act of 2011

The constitutional requirements for environmental protection in Zambia emanates from the Zambian Constitution (as amended by Act No. 18 of 1996). Though the Constitution does not specifically state that citizens have the right to a clean and healthy environment, it pledges:

*... to ourselves that we shall ensure that the State shall respect the rights and dignity of the human family, uphold the laws of the State and conduct the affairs of the State in such a manner as to preserve, develop, and utilise its resources for this and future generations<sup>13</sup>.*

The previous EPCCA (Cap. 204) enacted in 1990 (Act No. 12 of 1990) and amended by the Environmental Protection and Pollution Control Amendment Act in 1999 (Act No. 12 of 1999) was repealed and replaced by the Environmental Management Act of 2011 (EMA). The EMA reiterates the constitutional requirement whereby every person living in Zambia has the right to a clean and healthy environment. The principles upon which the Act is founded include:

Table:

Common heritage of both present and future generations	The generation of waste should be minimised, wherever practical, and waste should, in order of priority, be reused, recycled, recovered and disposed of safely in a manner that avoids adverse effects.
Adverse effects shall be prevented and minimised through long-term integrated planning and the coordination, integration and cooperation of efforts that consider the entire environment as a whole entity	The environment is vital to people's livelihoods and should be used sustainably in order to achieve poverty reduction and socio-economic development
The precautionary principle.	Non-renewable natural resources shall be used prudently, taking into account the needs of the present and future generations
The polluter pays principle.	Renewable natural resources shall be used in a manner that is sustainable and does not prejudice their viability and integrity
Equitable access to environmental resources shall be promoted and the functional integrity of ecosystems shall be taken into account to ensure the sustainability of the ecosystems and prevent adverse effects	People shall be involved in the development of policies, plans and programmes for environmental management
The citizen shall have access to environmental information to enable him/her to make informed personal choices that encourage improved performance by industry and the government	Community participation and involvement in natural resource management and the sharing of benefits arising from the use of the resources shall be promoted and facilitated

Though the Act has a heavy bias towards pollution prevention and control its overall intention is to protect air, water, land, and other natural resources. Although the 2011 EMA repeals the 1990 EPPCA, several regulations in relation to water are still being enforced. These include:

- Water Pollution Control (Effluent and Wastewater) Regulations, 1993

<sup>13</sup>Republic of Zambia, 1996. Constitution of the Republic of Zambia. Lusaka: Government of Zambia.

- Waste Management (Transporters of Wastes/Operation of Waste Disposal Sites) Regulations, 1993
- Hazardous Waste Management Regulations, 2001,
- Pesticides and Toxic Substances Regulations, 1994

Section 30 of the EMA makes provision for the Minister, on the advice of ZEMA, to promulgate new regulations relating to the administration and enforcement of both strategic environmental assessments and EIAs.

Other sections impacting on water resources management include requirement for undertaking strategic environmental assessment any draft policy, programme or plan that could have an adverse effect on environmental management or the sustainable management and utilisation of natural resources. On transboundary impacts the Act provides a framework for the control and restriction of any contaminants that may have a regional or global effect. The Minister, in consultation with other sectors, must enter into dialogue with the relevant authorities of neighbouring countries where transboundary impacts may occur.

#### **4.4 Land Act**

The Lands Act of 1995 recognises two land tenure classifications in Zambia: state lands and customary lands. Under the Lands Act, ownership of all land in Zambia is vested in the President on behalf of the people. The President may alienate land vested in him to any Zambian, or non-Zambian under specific circumstances, which are then referred to as leasehold tenure. Leasehold tenure may be granted for a maximum period of 99 years, with the possibility of extension. The Act sets out the conditions for transferring customary land into leasehold titles. It states that the President shall not alienate any land situated in a district or an area where land is held under customary tenure without first consulting and getting the approval of the Chief and the local authority. The Act provides for land use planning.

### **5. Organisational responsibilities for water resource management**

#### **5.1 Sectoral responsibilities for WRM**

The institutional framework for the water resources management goes beyond the Ministry of Mine Energy and Water Development and included various other organisations at several levels that comprise functions that include policy making and coordination level at central government level; sector regulation level; financing and facilitation level involving CPs and NGOs

At central government level, several government ministries cooperate at policy making level. The Ministry of Mines, Energy and Water Development (MEWD), has overall responsibility for the water sector and for water policy formulation and for water resources planning, management and development including water resources. The Ministry of Local Government and Housing (MLGH) through the Department of Housing and Infrastructure Development (DHID) has the responsibility for water supply and sanitation to local authorities in those areas without commercial utilities as per the Water Supply and Sanitation Act No.20 of 1997.



The Technical Services Department under Ministry of Ministry of Livestock has the responsibility to provide irrigation support services for agricultural purposes such as livestock watering fish farming and crop production. The Zambia Meteorological Department (ZMD) has the primary mandate for providing meteorological services and relevant for the development of agriculture and water resources.

The Ministry of Land Natural Resources and Environmental Protection (MLNREP) is responsible for all natural resources management and plays a role in water resources management through the implementation of National Policy for Environment. The Department of Natural Resources under MLNREP coordinates environment and natural resources management. Its main function is to promote stewardship of the land resources which include water resources and other natural resources. The interest of the Department of Forests (FD) in the MLNREP is to conserve forest resources and secure the services forests provide for public interest especially the head water forest areas. The basis of their work is awareness and improved collaboration with stakeholders.

The Zambia Environmental Management Agency is an environmental regulator and coordinating agency mandated to do all such things necessary to protect the environment. ZEMA through the Zambia's Environmental Management Act oversees water quality and pollution control, approves Environmental Impact Assessments (EIAs) and provides issuance of licenses to discharge a pollutant into the environment. ZEMA is responsible for controlling and monitoring water quality and pollution and determines the conditions for discharge of effluents. ZEMA issues discharge permits and has set up a water quality monitoring system targeted at monitoring effluents discharged into major river systems and their tributaries. Approximately 243 effluent discharge points are licensed mining, manufacturing, sewerage treatment facilities, abattoirs, and agriculture and energy industries. ZEMA uses established Department of Water Affairs water points for water quality monitoring.

The Zambia Wildlife Authority (ZAWA) controls, manages, conserves, protects and administers National Park, Game Management Areas and other sanctuaries for wildlife conservation including water resources for wildlife watering from threats such as fire, illegal harvesting, encroachment, deforestation, invasive species and water pollution. Weak law enforcement affects ZAWA management effectiveness resulting in loss of biodiversity and habitats which in turn affect water resources.

Since water is cross cutting, multi-sectoral coordination is being enhanced through the Water Sector Advisory Group (WSAG), chaired by the Ministry of Mines, Energy and Water Development, and introduced in 2003 to advise government on sector policy, direction and technical issues.

## **5.2 Responsibilities within the water sector**

Within the sector the Water Resources Management Authority a key institutional provision arising from the WRM Act. It is responsible for sustainable and rational utilisation, management and development of water resources down to sub-catchment level, including

managing water allocation. The catchment and sub-catchment structures provide structure for addressing water issues at lowest level in a more participatory way. The extent to which these structures will work with participatory approaches at the local level will depend on the ability to embrace knowledge sharing and experiences, flexibility in decision making and problem solving and responsiveness to all stakeholders. For public water professionals these are new and challenging ways of working.

Current WARMA preoccupation is finalising the organisational strategic plan; developing regulations for surface and ground water; strengthening the hydrometric network and improving the information management system. Critical for WARMA moving forward and for which resources are vital will be adopting holistic for managing water resources. This requires developing a water resources management plan for the country considerate of water availability and various sector demands. Related to WARMA is the Water Development Trust fund whose details are yet to be elaborated.

The WRM Act provides for the appointment of a Director responsible for water resources planning and policy development who is expected to advise the Minister on the a) development of policies for the efficient and effective integrated planning and optimum development, utilisation and protection of Zambia's water resources, in the public interest; and (b) mainstreaming of gender into the policies, programmes and activities relating to water resource management development and use.

At catchment level, the Catchment Councils, yet to be established as part of decentralised water resources management will perform the following functions

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a) Recommend to the Director-General of WARMA the decisions of a sub-catchment council on the issue of permits and licences in the sub-catchment council, as may be prescribed;	i) Take appropriate action in emergency situations related to water as may be prescribed;
b) Regulate and supervise the use of water; investigate and deal with any dispute relating to the use of water as may be prescribed;	j) Carry out public awareness campaigns for, and inform the public on, water resources and environmental management and climate change in cooperation with sub-catchment councils;
c) Consolidate data forwarded to it by a sub-catchment council or any other person;	K) promote gender mainstreaming in the decision-making processes relating to the use of water;
d) Prepare, and periodically update, catchment management plans for its catchment in accordance with this Act;	l) Recommend, to the Director-General, disciplinary and other measures to be taken in respect of any member of a catchment council, sub-catchment council or water users association or any officer of the Authority working with those institutions;
e) Harmonise sub-catchment management plans and local management plans with catchment management plans and facilitate implementation of these plans;	m) Undertake catchment protection and resource quality monitoring and evaluation;
f) Prepare catchment reports and regularly report to the Authority on catchment matters;	n) Propose catchment management strategies to the Authority;
g) Supervise and coordinate activities of sub-catchment councils and provide technical support to sub-catchment councils and water users associations, where necessary;	o) Monitor implementation of international and regional agreements at catchment level

h) carry out hydro-geological and hydro geological services, including water quantity and quality and monitoring and assessment of water resources and climate change;	
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Where appropriate sub-catchment councils will be established to perform the following roles

a.) Prepare, in collaboration with the appropriate authorities in the sub-catchment, an allocation plan for the sub-catchment for inclusion in the sub-catchment plan and submit the sub-catchment plan to the catchment council;	j) liaise and coordinate with appropriate authorities, conservancy authorities and water users associations on any matter relating to, or impacting on, the water resources in the sub-catchment, including measures on adaptation to climate change;
b) Undertake investigations, as may be prescribed, and make recommendations on applications for a permit or licence and submit such recommendations to the catchment council for consideration;	k) Investigate and deal with disputes relating to the use of water, as may be prescribed;
c) Regulate the use of water	l) Monitor water quality and implement regulations and guidelines on catchment protection;
d) Monitor permits, licenses, water works, water quantity and quality	m) Provide technical support to water users associations in the sub-catchment
e) Develop sub-catchment management plans;	n) Maintain equipment for data capturing
f) Harmonise local management plans with sub-catchment management plans and submit them to the catchment council for harmonisation with the catchment management plan;	o) Compile regular reports on activities in the sub-catchment and submit the reports to the catchment council;
g) Facilitate implementation of sub-catchment management plans;	p) Participate in emergency management and preparedness activities, as may be prescribed;
h) Collect hydrological, hydro-geological meteorological, water quality and quantity, socio-economic and environmental data and forward the data to the catchment council	q) participate in emergency management and preparedness activities, as may be prescribed;
i) Participate in emergency management and preparedness activities, as may be prescribed	r) Promote the participation of the community in water resources management and ensure gender mainstreaming in the decision making process relating to the management, development and use of water;

#### 5.4 Roles and functions within water supply and sanitation (WSS)

In accordance with the Local Government Act, the National Water Policy and the Water Supply and Sanitation Act, the local authorities and the Ministry of Local Government and Housing, have main responsibilities over water supply and sanitation. MLGH provides policy guidance, technical and financial control, and facilitates mobilization of foreign and local funds for capital development. MLGH, through its Department of Housing and Infrastructure Development (DHID) provides WSS services through donor funded projects, and some projects are implemented through D-WASHE committees.

The local authorities have the legal mandate to provide WSS services in their administrative areas under their jurisdiction. Urban LAs implement water and sanitation provision through the 11 commercial water utility companies (CUs), which have been established throughout the country. These are Chambeshi, Eastern, Kafubu, Luapula, Lukanga, Lusaka, Mulonga,

Nkana, North Western, Southern and Western. They are also responsible for solid waste and storm water management. Rural LAs directly provide services in collaboration with central government and NGOs

The Ministry of Health (MoH) has some responsibility over sanitation and hygiene promotion, whilst the Ministry of Education Science and Vocational Training and Early Education (MESVTEE) has responsibility over school sanitation as part of school infrastructure. The Ministry of Community Development Mother and Child Health (MCDMCH) identify the need for water and sanitation development from a community development and social welfare point of view.

An independent regulator for water and sanitation, NWASCO, was established in 1997. NWASCO provides something of a model for water supply and sanitation regulation in the region with the use of regulatory scorecards, water “Watch Groups” of consumers, and other regulatory tools.

## **5.6 Other actors relevant to WRM**

Other stakeholders in water include:

- Traditional leaders that have significant control as custodians over natural resources;
- Large water users from the public and private sectors such as ZESCO, Zambia Sugar Company, SABMiller, ZamBeef and the mines;
- Academic and research institutions such as UNZA, NISIR, and Copperbelt University
- Non-governmental organisations such as the World Fund for Nature, The Nature Conservancy, Zambia Water Partnership interested in promoting water stewardship and Water Aid, Care International, Water Aid and World Vision International that promote water supply and sanitation. CBOs such as Resident Development Committees (RDCs) cooperate in the promotion of community-based management of water supply and sanitation schemes.
- Local water user groups such as the Kamfinsa Water User Association on the Copperbelt who will assume importance in sub-catchment water management in the foreseeable future.
- Academic and research institutions include the Universities of Zambia, Copperbelt, Mulungushi, and the National Institute for Scientific and Industrial Research (NISIR). These are involved mainly as trainers of personnel and in research. For example, the University of Zambia is the premier training institution for water and related professions at both the undergraduate and post-graduate levels. The University of Zambia - IWRM-Centre offers integrated water resources management courses with a multi-disciplinary approach. NISIR conducts research in water quality of drinking water and also surface and ground assessment. At college level, Natural Resources Development College under MACO offers Diploma level training in Water Engineering

- Development Cooperation Partners that support WRM which include German cooperation assistance (KfW; GIZ), the World Bank, African Development Bank and UNDP.

The private sector is a key water user for economic and social purposes. Some large scale farmers, mining and manufacturing companies, provide bulk water and domestic water supply and sanitation services for staff and operations. Others are involved as contractors to the sector offering various goods and services.

## **6. Processes and procedures relating to WRM**

### **6.1. Establishing water user associations**

Section 24 (1) of the WRM provides that the Minister may, on the recommendation of the WARMA, by statutory instrument, constitute a water users association for any area of a catchment. The members of a water users association shall be nominated, in accordance with prescribed criteria, by the users of water, an appropriate authority, a conservancy authority, a local authority or a traditional authority, in the area of the catchment. The Minister shall appoint the members of a water users association, in accordance with the prescribed criteria.

Further the Minister shall, in the statutory instrument, made under subsection (1), specify (a) the name of the water user association. The number of members of the water users association is limited to ten members. The Minister is mandated to specify the area of a catchment in which the water users association shall operate including matters relating to the management of the water users association, establishment of, and election of members to, a management committee and their tenure of office, the holding of annual general meetings and other meetings of the association, annual plans and budgets, finances and financial records, annual reports and technical and other support. The Minister is also expected to provide guidance on the operation of the water users association;

### **6.2 Procedure for Environmental Impact Assessment**

The EIA process to be followed is clearly set out in the EIA Regulations of 1997. The first step in the EIA process is to determine whether the project is listed in the First or Second Schedules attached to the EIA Regulations of 1997. This will determine whether the developer has to undertake a Project Brief or a full EIA. Regulation 3(2), provides guidance for the necessity of preparing a Project Brief and Regulation 7 (1) on whether an EIS is necessary. If the proposed project is not listed on under any of the above sections then the developer is not required to complete a Project Brief or EIS. A Project Brief is a report by the developer that includes preliminary predictions of the possible impacts of a proposed project on the environment. It constitutes the first stage in the EIA process.

Once a developer has determined that a Project Brief is needed s/he must conduct such studies that will enable a consultant to compile a document that states the following in a concise manner as in Regulation 4 of the EIA Regulations, 1997:

- Description of the environment at the project site;
- Objectives and nature of the project and reasonable alternatives;
- Main activities that will be undertaken during site preparation, construction and after the development is operational;
- Raw and other materials that the project will use;
- Products and by-products, including solid, liquid and gaseous waste generation;
- Noise level, heat and radioactive emissions from normal and emergency operations;
- Expected socio-economic impacts of the project and the number of people that the project will resettle or employ, directly, during construction and operation;
- Expected environmental impact of the project, considering the provisions of paragraphs (c) to (g);
- Expected effects on biodiversity, natural lands and geographical resources, and the area of land and water that may be affected through time and space; and
- A description of mitigation measures for adverse impacts and any monitoring programmes to be implemented.

Regulation 5 of the EIA Regulations relates to the submission of the Project Brief to ZEMA. And its review by the authorising agency with the stipulated time limit. If ZEMA determines that a project is likely to have a significant impact on the environment, it will inform the developer within 40 days of receiving the Project Brief that an EIS must be prepared in accordance with the EIA Regulations of 1997. This is followed by a public consultation (especially if the project is large) with the interested and affected parties at the earliest possible stage of the process – during the Project Brief phase. The developer shall, before submitting the EIS to ZEMA, take all measures necessary to seek the views of the people in the communities that will be affected by the project. This requires the developer to publicise the project and hold meetings in the communities. Once the EIS is prepared and submitted to ZEMA, the EIS is entered in the EIS Register and a review process is initiated involving stakeholders. ZEMA may cause to be organised, or cause to be organised, public meetings in the locality of the proposed project.

At the conclusion of the review process ZEMA issues a decision letter providing reasons for rejection of the project or conditions to the authorising license. If any party is aggrieved by the decision, that party may, in writing, appeal to the Minister against the decision within a period of ten days after receipt of the decision letter from ZEMA. The Minister shall render his decision within fourteen days of receiving an appeal. If the aggrieved party is not content with a decision of the Minister, he may appeal to the High Court. An authorisation licence, permit or permission that has been issued, following preparation of an EIS, shall not be valid unless it has an Annex signed by the Director stipulating the conditions to be implemented.

The environmental authorisation issued by ZEMA will be valid for a period of three years. If no work has started on the project within that period, the developer must reregister with the authorising agency. The authorising agency will then have to decide whether another EIS is required or whether a supplement to the original EIS can be submitted (Regulations 30–33). Follow up environmental audit is required from the developer further to which ZEMA will

require the developer to carry out specified remedial actions and further audits at such times as it considers necessary.

#### **6.4 The Water Pollution Control (Effluent and Waste Water)**

The Water Pollution Control (Effluent and Waste Water) Regulations, 1993 empower ZEMA to license an entity which intends to discharge effluent into the aquatic environment. The application for license to discharge effluent shall contain information relating to the quality and quantity of effluent, its treatment and such other information. An entity intending to withdraw water from a water course or any other source for the purpose of diluting an effluent is also required to apply to the ZEMA for a license. ZEMA issues a license to discharge effluent once satisfied that the applicant has adequate and appropriate facilities and equipment for pre-treatment and that the effluent will not cause significant damage to the environment. The applicant is expected to conform to the conditions and standards for chemical and physical parameters contained in the table of standards for effluent and waste water provided. ZEMA maintains a register of licence holders to discharge effluent into the aquatic environment or to withdraw water from a water course or any other source for the purpose of diluting an effluent to make it acceptable. ZEMA may at any reasonable time enter any premises on which a licensed activity is being conducted and take samples to analyse and examine materials used for the licensed activity.

If ZEMA has reasonable cause to believe that an entity contravening any of the provisions of these Regulations or any condition of a licence or is likely to contravene any of the provisions of these Regulations or a condition of licence, ZEMA shall serve an enforcement notice on that entity. Any person who contravenes any of the provisions of Regulations or conditions of the licence after an enforcement notice has been issued shall have the license revoked or fined or imprisoned. The standards (limits) for effluents and waste water cover physical, bacteriological, chemical, metals, organics, and radioactive materials parameters.

#### **6.5 Procedure for issuing and monitoring Water Use Permits**

The Water Development Board under the MMEWD had responsibility for issuing water use rights under the Water Act of 1949. The current WRM Act 2011 mandates the Water Resources Management Authority to issue and monitor permits for the doing of any activity by any person, in any catchment or on, or along, a water resource. WARMA is in the formative stage and is yet to conclude procedures for issuing and monitoring water use permits

#### **6.6 Procedures for disaster management (Floods and Drought)**

In place the Disaster Management Operations Manual (2005) developed by the Disaster Management and Mitigation Unit under the Office of the Vice President. The manual is prepared in the context of Zambia's current needs in the area of disaster management and used as an instrument for the implementation of the National Disaster Management Policy and the National Disaster Management Act of 2005.

In addition Sections 146 and 147 of the WRM under Part XIV- “Emergency Situations” elaborates measures for droughts and floods under the Ministers hand. In both situations the Minister is authorised to situation and may take necessary action as provided for to manage the particular disaster.

### **6.7 Procedures for reporting and resolving water conflict**

Firstly the NWP recognises the relevancy fostering closer cooperation for the judicious, sustainable and co-ordinated management, protection and utilisation of water in order to advance the national agenda of poverty alleviation.

The WRM Act provides for inter-sector collaboration with the wildlife management (Zambia Wildlife Act No 12 of 1998); environmental management (Environmental Management, Act No. 12 of 2011); water supply and sanitation service provision (Water Supply and Sanitation Act, No. 28 of 1997); national heritage conservation (National Heritage Conservation Commission Act, Cap.173); land administration (Lands Act, Cap.184 and Lands and Deeds Registry Act Cap.185); Mining (Mines and Minerals Development Act No. 7 of 2008); fisheries management (Fisheries Act, No. 22 of 2011); forests management (Forests Act, Cap 199); inland waterways (Inland Water Shipping Act Cap. 466); town and country planning (Town and Country Planning Act, Cap. 283); public health (Public Health Act, Cap. 295); maintenance of minimum standards (Standards Act, Cap 416); local government administration/decentralisation (Local Government Act Cap.281) and disaster management (Disaster Management Act, No. 13 of 2010).

Part V of the WRM provides for water quantity and quality management in terms of lows reserves, discharges into water bodies and control of pollution. Section VI further provides for managing water shortage areas. Part V of the WRM, provides for the declaration However these specific provisions are yet to be supported by specific procedures for reporting and resolving water conflicts.

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