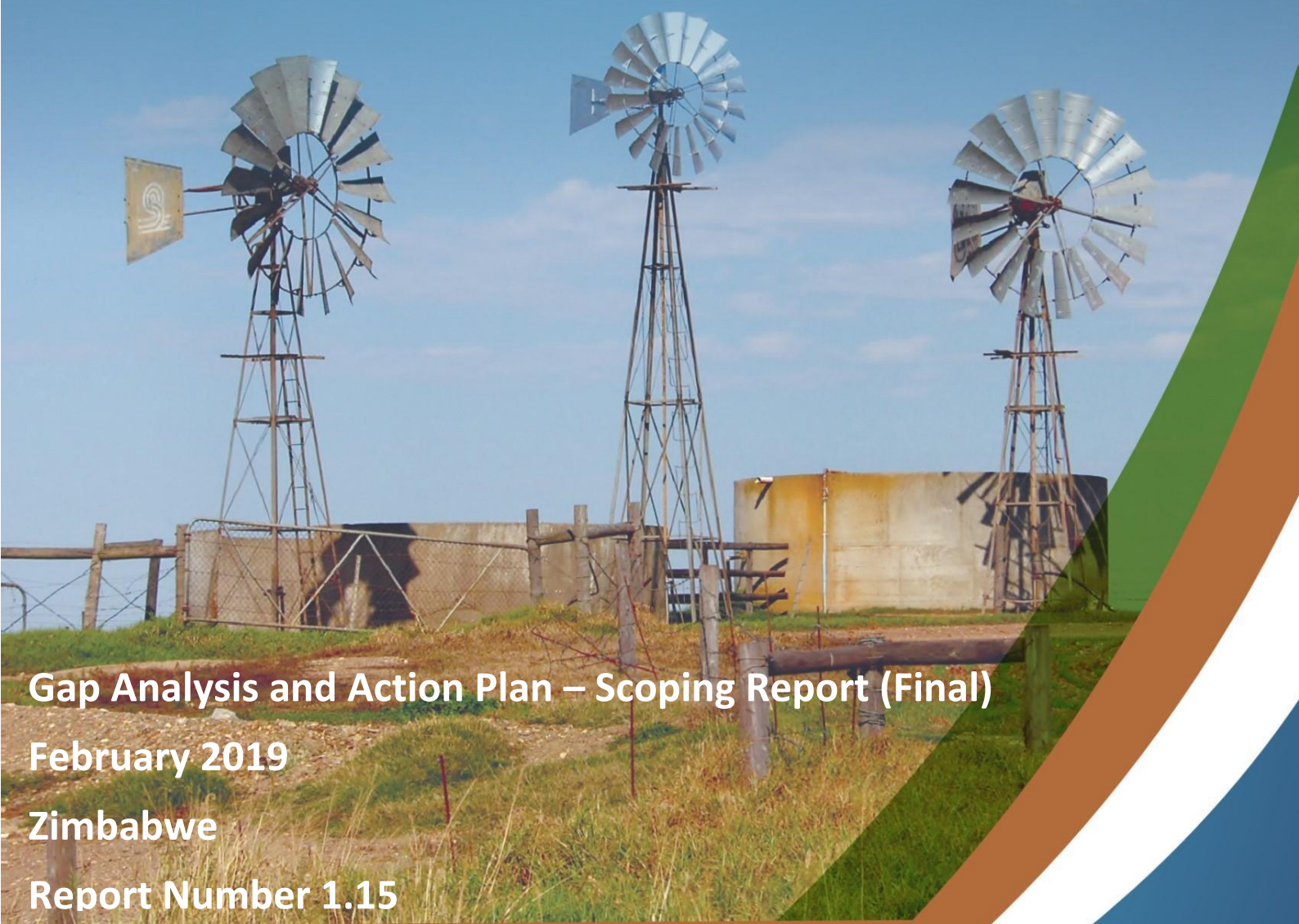


# Policy, Legal and Institutional Development for Groundwater Management in the SADC Member States (GMI-PLI)



**Gap Analysis and Action Plan – Scoping Report (Final)**

**February 2019**

**Zimbabwe**

**Report Number 1.15**





This report emanates from the project Policy, Legal and Institutional Development for Groundwater Management in the SADC Member States (GMI-PLI) commissioned by the Southern African Development Community Groundwater Management Institute (SADC-GMI), and executed by Pegasys.

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## FOREWORD

The Southern African Development Community (SADC) Member States, through the support of International Cooperating Partners have gone through a series of Water Sector Reforms which varied in terms of policy, legal and institutional development. The focus of the water sector reforms has been on Integrated Water Resources Management and aimed at achieving sustainable and equitable distribution of water resources in the respective Member States. To a large extent, the water sector reforms did not comprehensively address the sustainable management of groundwater resources, yet 70% of the population in the SADC region depend on it. Climate change continues to negatively affect the availability of surface water, placing significance reliance on the use of groundwater for both urban and rural supply throughout the region. Human wellbeing, livelihoods, food security, ecosystems, natural habitats, industries and urban centres growth throughout the SADC Region are increasingly becoming more reliant on groundwater. The SADC region in general has an abundance of groundwater resources. However, due to several factors which include the lack of an enabling policy, legal and institutional environment, only an estimated 1.5% of the available renewable groundwater resources are currently being utilised.

It is estimated that there are about 30 Transboundary Aquifers (TBAs) and 15 transboundary river systems and that these systems are central to the water security of the region. There is therefore a need for Members States to establish and strengthen existing policy, legal and institutional frameworks to achieve equitable and sustainable access to water resources through joint management of the transboundary resources. It is in view of the above and in response to the need to strengthen the sustainable use of groundwater resources conjunctively with surface water at both the national and regional level, that the Southern African Development Community – Groundwater Management Institute (SADC-GMI) was established by the SADC Secretariat, on behalf of the Member States.

The vision of the SADC-GMI is, “to be a Centre of Excellence in promoting equitable and sustainable groundwater management in the SADC region”. The key focus areas of SADC-GMI are to 1) advocate, raise awareness and provide technical support in SADC around sustainable management through the dissemination of information and knowledge; 2) create an enabling environment for groundwater management through policy, legal and regulatory frameworks; 3) promote action-oriented research; 4) promote impact-oriented capacity building and training for groundwater management in the region; 5) lead and promote regional coordination for groundwater management; and 6) support infrastructure development for groundwater management.



In pursuance of the focus area of creating an enabling environment, SADC-GMI implemented the project entitled “Policy, Legal and Institutional Development for Groundwater Management in the SADC Member States, (GMI-PLI)”. The methodology for said project included the development of the Desired Future State, conducting a baseline study of best practices, and description of policy, legal and institutional frameworks which promote sustainable groundwater management. Using an in-Country Experts model, a systematic analysis of the existing policy, legal and Institutional frameworks in comparison with the Desired Future State was conducted to identify gaps that required to be addressed in order to fulfil the SADC-GMI mandate – to achieve sustainable groundwater management in all 16 SADC Member States. The analytical assessment of the gaps identified at national level culminated in the production of 16 National Gap Analysis & Action Plan Reports and the higher-level Regional Gap Analysis Report. The latter summarises the findings across the SADC region.

This National Gap Analysis for Zimbabwe provides an overview of the existing gaps in policy, legislation, strategy, guidelines and the institutional frameworks and further suggests enablers required to unlock the identified gaps/challenges. The report provides a clear guidance for Zimbabwe to develop an implementation roadmap through a process of prioritising the Strategic Actions in close liaison and in consultations with all relevant stakeholders. It is hoped that these National/Regional Gap Analysis and Action Plan Reports will aid Zimbabwe to develop their own Roadmap which will ultimately advance the groundwater narrative and bring it at par with surface water in terms of policy, legal and institutional frameworks which will no doubt enhance sustainable groundwater management at a national and regional level in the SADC Region.

James Sauramba  
Executive Director

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The following individuals and organisations are thanked for their contributions to the project:

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The project team would like to thank all those stakeholders that contributed to the project from Government, Private Sector, Civil Society and Academia and Research.

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	Gap Analysis and Action Plan – Scoping Report: Democratic Republic of Congo	1.3
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## LIST OF ACRONYMS

ACRONYM	DEFINITION
<b>BSAP</b>	British South Africa Company
<b>CBM</b>	Community Based Management
<b>CIWA</b>	Cooperation in International Waters in Africa
<b>EMA</b>	Environmental Management Agency
<b>GESI</b>	Gender Equity and Social Inclusion
<b>GEF</b>	Global Environment Facility
<b>GMI-PLI</b>	Groundwater Management Institute – Policy, Legal and Institutional
<b>GW</b>	Groundwater
<b>IWRM</b>	Integrated Water Resources Management
<b>MoSCoW</b>	Must have, Should have, Could have, and Won't have
<b>MSF</b>	Medecins Sans Frontieres
<b>NAC</b>	National Action Committee
<b>NCU</b>	National Coordination Unit
<b>NGO</b>	Non-Governmental Organisation
<b>NWRMP</b>	National Water Resources Master Plan
<b>PLI</b>	Policy, Legal and Institutional
<b>RWIMS</b>	Rural Wash Information Management System
<b>SADC</b>	Southern African Development Community
<b>SADC-GMI</b>	Southern African Development Community Groundwater Management Institute
<b>UNICEF</b>	United Nations Children's Fund
<b>WRM</b>	Water Resources Management
<b>WSS</b>	Water Supply and Sanitation
<b>ZINWA</b>	Zimbabwe National Water Authority
<b>ZIWASRA</b>	Zimbabwe Water and Sanitation Regulatory Authority

## 1. INTRODUCTION

### 1.1 Background to the GMI-PLI Project

The critical role of groundwater in building the region's resilience to climate change and improving water security is reflected by the World Bank in their June 2017 online article: *People in Southern Africa are largely dependent on groundwater shared between countries and communities for health and well-being, food production, and economic growth*. As climate variability alters the amount of surface water that is available, people in the region are increasingly turning to groundwater, a resource that is already challenged by threats of depletion and pollution.

The sustainable management of groundwater is a key part of the broader water security for the region, especially in understanding transboundary aquifers. The Southern African Development Community (SADC) has established the Groundwater Management Institute (GMI) to better understand the region's needs and improve their groundwater management capabilities.

The SADC Groundwater Management Institute (SADC-GMI) is the implementing agency of the World Bank funded Sustainable Groundwater Management in SADC Member States Project. This funding is secured through the Global Environment Facility (GEF) and the Cooperation in International Waters in Africa (CIWA) trust. Part of this funding has been dedicated by the SADC-GMI to respond to gaps in the existing policy, legal and institutional (PLI) frameworks for groundwater management in the region towards fulfilling one of four main components of the project –“Enhancing institutional capacity of governments in SADC Member states and transboundary organisations”. The objective is to be met through a series of organised steps which broadly included the development of a benchmark document called the Desired Future State Document, a Gap Analysis and high-level Action plan for all SADC Member States and for the region, development of a suite of guidelines to strengthen groundwater management regionally. To inform the guideline on the development of a groundwater PLI Roadmap, Tanzania was selected as a pilot from which to draw lessons and develop the process.

This report presents the outcomes of the gap analysis for Zimbabwe.

### 1.2 Socio-economic drivers for Zimbabwe

The national socio-economy of Zimbabwe relies heavily on water and the major drivers that inform development and impact upon water resources include mining, industry, urban water supply, rural water supply and agriculture. In the past, high rainfall was reflected in economic prosperity (Figure 1) primarily because the economy relies mainly on agriculture and the major source of water was surface water bodies. Groundwater was mainly used in low rainfall areas and for rural water supply. Evidently, it is impossible to envisage meaningful socio-economic development while ignoring management of water resources.

The total population of Zimbabwe was estimated at 14.6 million in 2014 of which 60 per cent is rural ([http://www.fao.org/nr/water/aquastat/countries\\_regions/ZWE/](http://www.fao.org/nr/water/aquastat/countries_regions/ZWE/)). The annual population growth rate was 3 per cent in 2013 with the average population density of 37 inhabitants per km<sup>2</sup>. Access to water for

basic human needs is a right for all Zimbabweans. The water must be in sufficient quantity and adequate quality to sustain life. This water, also termed “Primary Water “, is given first and highest priority in the provision of water supply services. The frequent and periodic droughts have resulted in serious water shortages in both the rural and urban areas.

Government together with its development partners, local, regional and international organisations, have since Independence in 1980 made a concerted effort to ensure that 60% of the total population who live in rural areas have access to sufficient and good quality water for primary use. Community based management strategy requiring community participation in decision making at all levels, has been adopted to ensure sustainable cooperation and maintenance of water infrastructure by water users. Women and children have also been targeted in such initiatives as they play a huge role in the use, management and protection of water resources and water infrastructure.

The correlation only became distorted due to economic difficulties that were experienced in the country from around late 1990s (See **Figure 1** below). The economic decline, driven by unprecedented hyperinflation reached crisis proportions. Clearly, economic crisis resulted from factors outside of the water sector but resulted in a collapse of water revenues generated through fees, levies, treasury contributions and other support including donor funds (NWP, 2012). The decline in Water fund revenue resulted in serious deterioration of existing water infrastructure and a decline in the construction and/or development of new infrastructure.

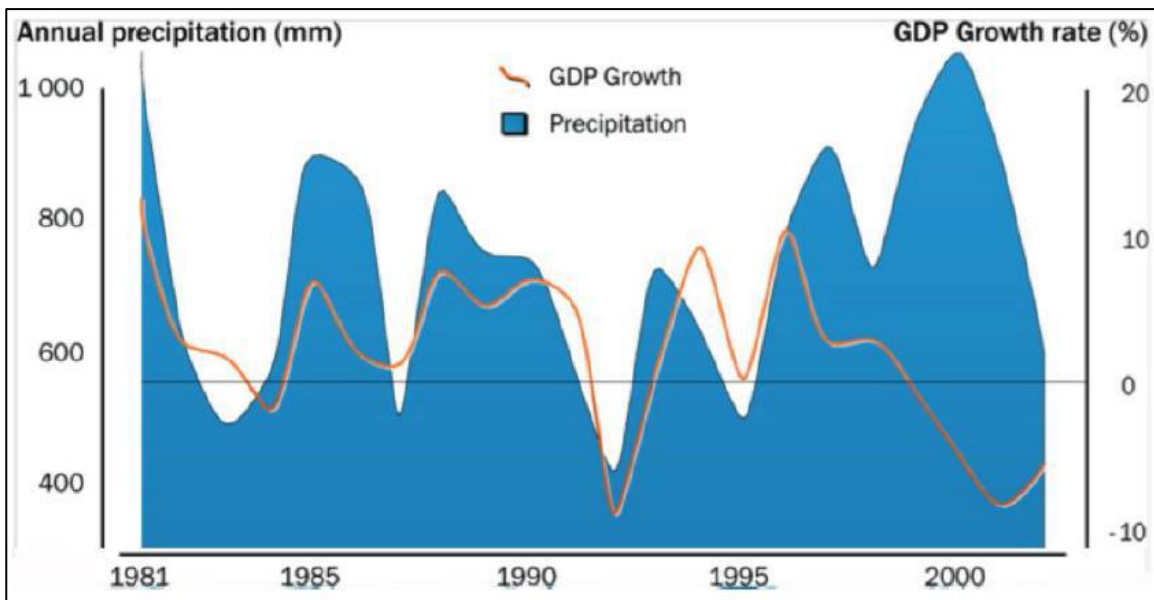


Figure 1: The correlation between rainfall and GDP in Zimbabwe (from UNEP/GRID 2010)

Source: National Water Policy August 2012

Variable rainfall has of late become a common feature of the Zimbabwean climate and gradually the country’s main socio-economic drivers are becoming more reliant on groundwater as an alternative water source. Lately, the environment has been incorporated in the list of socio-economic drivers as a legitimate

user with impacts upon water resources. Water is a finite resource whose availability is threatened by industrialisation, urbanisation and climate change. It is therefore unrealistic to talk about meeting water needs without seriously thinking about and properly planning for the development, maintenance, monitoring and management of all water resources in an integrated way.

### **1.3 Water resources**

#### **1.3.1 Status of water resources (surface water, ground water and transboundary)**

Zimbabwe has limited water resources, and much of the country is basically a semi-arid country with a mean annual rainfall that is generally very low. Rainfall varies spatially from about 1200 mm per year in the eastern highlands to about 400 mm per year in the low lying south west of the country.

However, within the respective areas, rainfall variability is high thereby affecting water availability and reliability. Most rivers, especially in the drier parts of the country, are seasonal with the exception of major rivers such as Munyati, Manyame, Mazowe, Save and Runde. However, during droughts, even these large rivers dry up especially in the months of July to November due to low baseflow. Since mean annual rainfall is generally low in Zimbabwe, an extensive network of 10 000 small to large dams has been constructed throughout the country to store water received during the main rainy season for water supply and recreation.

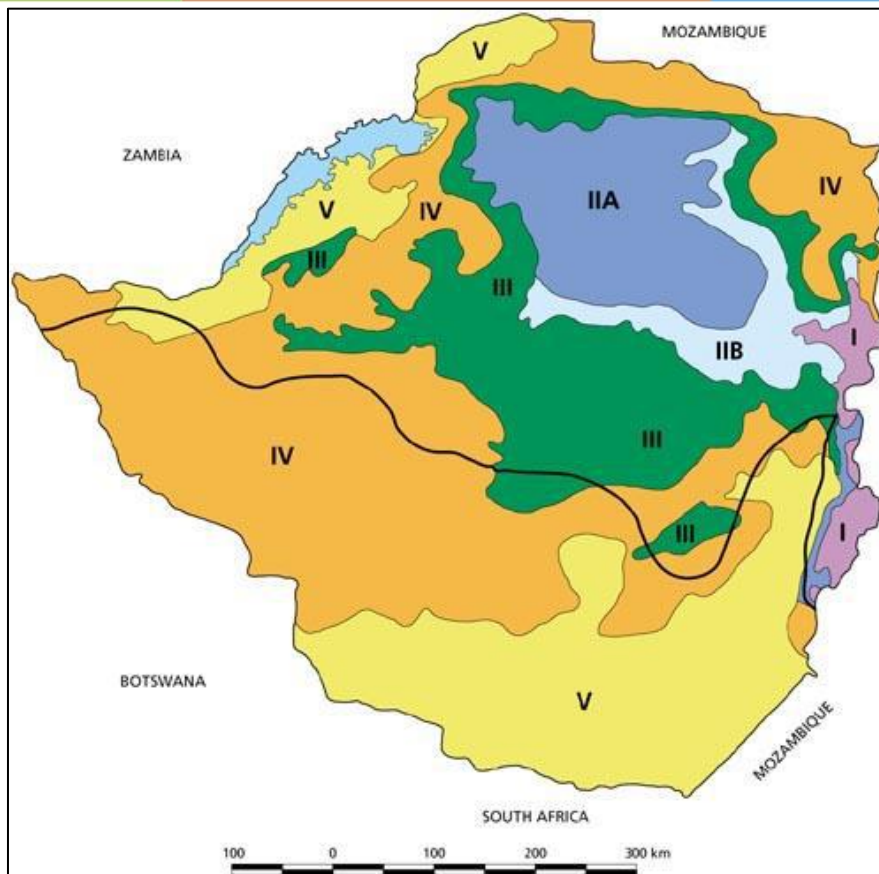
The country is divided into five natural regions as shown below in Figure 2, on the basis of mainly the rainfall regime among other factors. It must be noted that groundwater use is not correlated to amount of rainfall received in a particular region although in Regions 4 and 5, the major source of water is groundwater due to erratic and unreliable rainfall.

#### **Region 1**

This region lies in the east of the country and rainfall is generally above 1 000 mm/year (most of which falls throughout the year). The area experiences generally low temperatures and has high altitude and steep slopes. The country's timber production is located in this region.

#### **Region 2**

This region is located within the middle of the north of the country with rainfall ranging from 750 to 1 000 mm/year. Rainfall is fairly reliable, falling from November to March/April, hence suitable for intensive cropping and livestock production. This region accounts for 75-80% of the area planted to crops in Zimbabwe and has an intensive network of boreholes for summer cropping.



**Figure 2: Zimbabwe Rainfall Natural Regions**

(Source: <http://www.fao.org/docrep/009/a0395e/a0395e06.htm>)

### Region 3

Region 3 is located mainly in the mid-altitude areas of the country. It is characterised by annual rainfall of 500-750 mm, mid-season dry spells and high temperatures. Cropping systems are based on drought-tolerant crops and semi-intensive livestock farming. The predominant farming system is smallholder agriculture with intensive cropping in communal areas while large-scale farming comprises ranching with fodder crops.

### Region 4

The region is located in the low-lying areas in the north and south of the country. It is characterised by annual rainfall of 450-650 mm, severe dry spells during the rainy season, and frequent seasonal droughts. The region is considered unsuitable for dryland cropping. However, it is home to many smallholder farmers who successfully grow drought-tolerant crops. The region is ideally suitable for cattle production under extensive production systems and for wildlife production.

### Region 5

The region covers the lowland areas which fall below 900 m above sea level in both the north and south of the country. In these areas, rainfall is less than 500 mm/year, unreliable and highly erratic. Region 5 is suitable for extensive cattle production and game-ranching.

Zimbabwe shares transboundary river basins with the Zambezi, Limpopo and Save, being the main ones. Currently Zimbabwe has a joint venture agreement with Zambia to construct Batoka Dam and a hydropower generation scheme on the Zambezi River. The other basins, except for Limpopo basin, put Zimbabwe in the headwater area of the catchments, hence limit the prospects for water resources development.

There are also some transboundary aquifers which include (Earthwise):

- Limpopo Basin (Mozambique, South Africa, Zimbabwe);
- Tuli Karoo Sub-basin (Botswana, South Africa, Zimbabwe);
- Eastern Kalahari Karoo Basin, Nyamadhlovu (Botswana, Zimbabwe);
- Nata Karoo Sub-basin (Angola, Botswana, Namibia, Zambia, Zimbabwe); and
- Medium Zambezi Aquifer (Zambia, Zimbabwe).

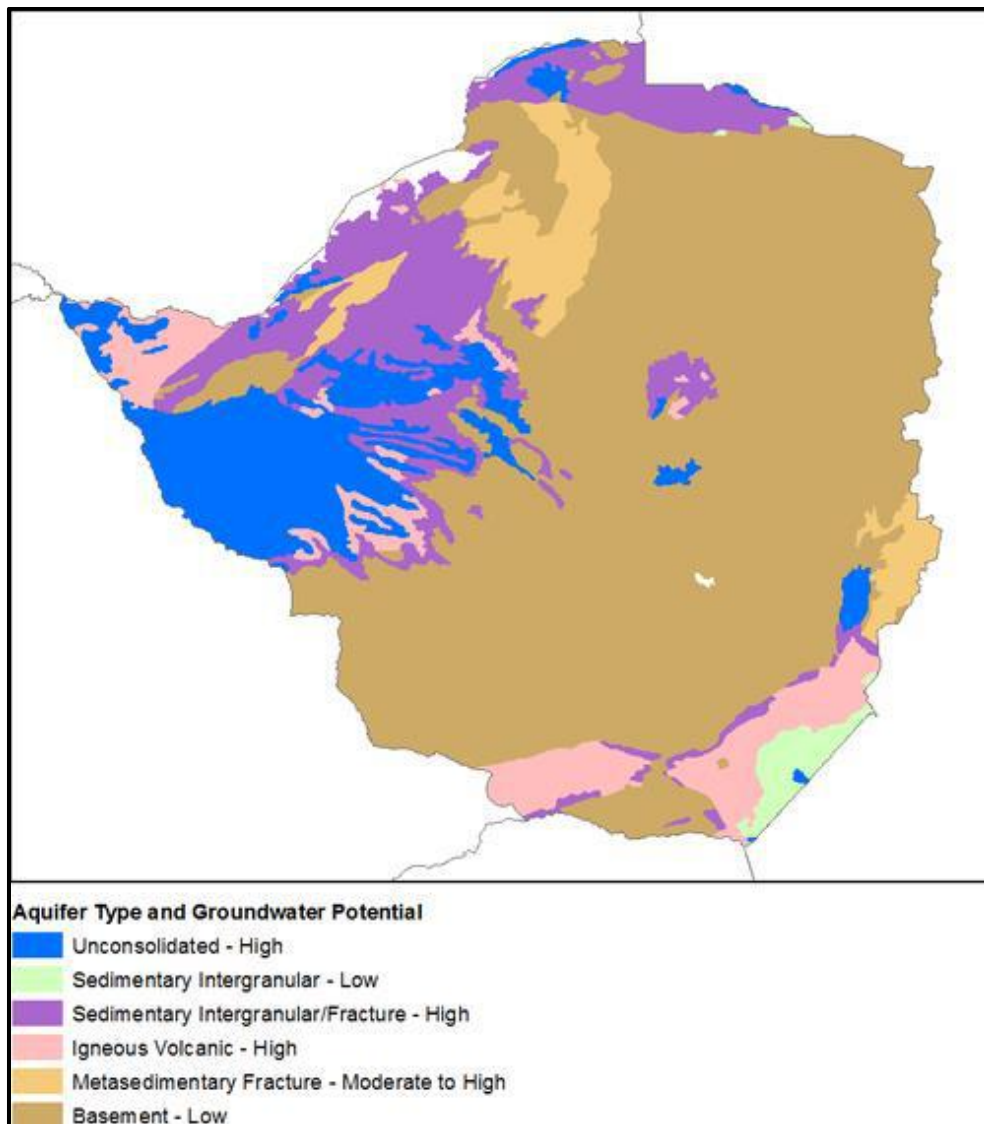
However, these aquifers have not been fully explored.

### 1.3.2 Groundwater environment and ecology

Groundwater environment of Zimbabwe can be delineated into six units based on the geology as shown in Figure 3 below. The units include:

1. **Unconsolidated:** Unconsolidated sedimentary sequences of alluvial clay, sand and gravel in the river valleys. The sediments vary in thickness to about 80m in the Save Valley but can be less than 25m in other places. The sediments have a high groundwater development potential.
2. **Sedimentary Intergranular:** Intergranular sedimentary units consisting of mudstones, fine grained arkose, grit-conglomerate and sandstone bands. Their groundwater development potential is low due to the low permeability.
3. **Sedimentary Intergranular/Fractured:** These comprise Upper and Lower Karoo arenaceous and argillaceous sequences. The Upper Karoo comprises the Forest Sandstone and the Escarpment Grit. The Lower Karoo consists of the Madumabisa Mudstone and the Upper and Lower Hwange Sandstone. Where fractured, this unit has a high groundwater development potential.
4. **Igneous Volcanic:** This basaltic aquifer comprises of amygdaloidal lava flows with interbedded tuffa horizons. It has a high groundwater development potential.
5. **Metasedimentary Fracture:** These are fractured Precambrian metasediments rocks which include shales, phyllites, quartzites, siltstones, sandstones, conglomerates, limestones and dolomites as well as minor basic metavolcanics. Where fractured these rocks exhibit moderate to high groundwater development potential.
6. **Basement Complex:** The Basement Complex includes the Precambrian and metavolcanics rocks. These rocks are estimated to cover more than 60% of the country's land area mainly in central Zimbabwe. It includes Proterozoic granites, granodiorites, adamellites, tonalities, greenstones, metavolcanics, paragneiss's and anorthosite gneisses. Other linear belts are formed by dolerites and sheets of dolerite composition trending in various directions also known as the Mashonaland Suite of Dykes. These rocks have a low groundwater development potential, but where weathered

and/or fractured to depth, these rocks have a moderate to high groundwater development potential.



**Figure 3: Hydrogeology of Zimbabwe**

([http://earthwise.bgs.ac.uk/index.php/Hydrogeology\\_of\\_Zimbabwe#Hydrogeology](http://earthwise.bgs.ac.uk/index.php/Hydrogeology_of_Zimbabwe#Hydrogeology))

The quality of groundwater supplies in Zimbabwe is generally good at present, since there is little overall use of chemicals in Zimbabwean agriculture especially in rural areas. However, localised pollution exists especially in urban and peri-urban areas. The major source of pollution is sewerage due to poorly maintained sewer systems or absence of sewer systems.

### 1.3.3 Status of groundwater infrastructure

An estimated 70 000 public and private boreholes and wells have been drilled throughout the country. It is also estimated that 90% of them were developed in rural areas and comprise of shallow and deep low yielding wells and boreholes. The wells/boreholes are mainly used to supply villages with domestic water including watering of domestic animals especially during the dry season and dry years. Water is mainly



abstracted from boreholes using a hand pump, due to limited rural electrification. The Zimbabwean hand pump has traditionally been the unique ‘Zimbabwe bush pump’, which is relatively robust. Other common pumping mechanisms include the rope and washer pump, treadle pump, and the rope and bucket. However, lack of maintenance and support has led to increasing levels of pump failure. According to the NCU database, RWIMS, a total of 37,904 water points have been recorded in the rural areas. Out of this total, 20,715 (54.7%) water points were functional while 17,189 (45.3%) were non-functional as at 21 September, 2018 ([www.ncuwash.org](http://www.ncuwash.org)). It must be noted that these numbers exclude water points in urban areas, farms, mining areas and private water points in rural areas. However, it is known that some water points are not functional because of one or more of the following reasons:

- Collapsed well/borehole;
- Contaminated well/borehole;
- Poorly sited well/borehole;
- Breakdown of pumping mechanism
- Reduction in efficiency due to inadequate maintenance;
- Dried up due to declining groundwater recharge; or
- Prematurely decommissioned during development.

Deeper, high yielding boreholes are used for irrigation on commercial farms and are usually equipped with electric pumps. Electric borehole pumps are also used in urban areas, where there has been an increase in the number of private urban boreholes due to inadequate municipal water supply. Boreholes drilled for public use in urban areas are equipped with bush pumps.

#### 1.3.4 Groundwater supply and demand

In line with the United Nations General Assembly’s declared “Drinking Water and Sanitation Decade, 1981 - 1990”, the government made concerted effort to improve provision of drinking water in rural areas through borehole and well sinking and/ or deepening programmes. Significant progress was made with regards to water supply. However, rural primary water usage (excluding agriculture) does not constitute a substantial demand on the country’s water resources. According to the 2012 census, the total annual abstraction of groundwater in the rural areas, from an estimated 40,000 boreholes, is estimated at  $35 \times 10^6 \text{ m}^3$  ([http://earthwise.bgs.ac.uk/index.php/Hydrogeology of Zimbabwe](http://earthwise.bgs.ac.uk/index.php/Hydrogeology_of_Zimbabwe)). National data from the ZINWA seven catchment offices declare a total water withdrawal of  $887 \times 10^6 \text{ m}^3$  in 2014 ([http://www.fao.org/nr/water/aquastat/countries\\_regions/ZWE](http://www.fao.org/nr/water/aquastat/countries_regions/ZWE)). Hence groundwater abstraction in rural areas is about 4% of the total water abstraction in Zimbabwe. However, groundwater remains the main drinking water source in rural parts of Zimbabwe. Overall, over 68% of the population in Zimbabwe depend on groundwater (Dzvairo et al., 2006).

The demand for groundwater has also been growing in urban areas due to failure by local authorities to provide adequate (quantity and quality) water to growing urban population. Local authorities do not directly manage groundwater. They have by-laws which guide the development of water points with respect to distance from property boundary or sewerage systems. In addition, it must be noted that local

authorities in general do not supply groundwater to their urban population. In fact, where they have water supply dams, the local authorities are not keen to see boreholes drilled as groundwater use results in loss of water revenue for them. Some small urban centres are supplied primarily with groundwater. However, borehole drilling, pumping, groundwater management and sale of water to the respective local authorities is managed by ZINWA while the councils only manage the distribution and sale of the water to the residents.

In addition to domestic use in rural and urban areas, groundwater supplies agriculture and industry in Zimbabwe. The total groundwater abstraction for the agricultural sector in the 1990s was estimated at  $350 \times 10^6 \text{ m}^3$  but the demand has declined from around year 2000 following the land reform programme. A number of industries have closed down owing to the economic decline from about year 2000. The few manufacturing industries still operating, rely on groundwater for their processes since the municipal supplies are either poor quality or erratic or both. Total groundwater use in Zimbabwe is estimated to be about 25% of total groundwater available ([http://earthwise.bgs.ac.uk/index.php/Hydrogeology of Zimbabwe](http://earthwise.bgs.ac.uk/index.php/Hydrogeology_of_Zimbabwe)). Hence there is room for further development of groundwater resources.

## 2. METHODOLOGY

### 2.1 Overview

The methodology for the gap analysis included conducting a desktop review of available literature. This was coupled with the development of a desired future state to provide a baseline for groundwater management and is discussed in more detail below. Key stakeholders were also identified during the early stages of the gap analysis and multiple engagements were held whereby a questionnaire was administered to evaluate the current state of groundwater management in the country. Based on the desktop review, stakeholder engagements and results from the questionnaire, a draft gap analysis report and action plan was developed which was then validated at Validation Workshops. These workshops involved key groundwater actors from the Member State and provided an opportunity to obtain buy-in and support for the gap analysis reports as well as obtaining further inputs. The draft report was also circulated to broader stakeholders i.e. Water User Associations, Water Service Providers etc. whereby written comment was received. The draft gap analysis report was then finalised based on the comments received from the Validation Workshops and broader stakeholders. The methodology outline is illustrated in the figure below.



Figure 4: Methodology Outline

Documents reviewed include the Water Act (1998), Zimbabwe National water Authority Act (1998), National Water Policy (2012), Environmental Management Act (2002), National Environmental Policy and Strategies (2009) and other related legislation, research documents, reports, standards and guidelines. The full list of reviewed documents is presented in **Appendix A**. The full list of key stakeholders identified is presented in **Appendix B** together with those that were engaged with. The structured questionnaire that was completed by the stakeholders is based on the Desired Future State and is elaborated on below.

The desired future state has been contextualised for the SADC region, taking into account:

- The high levels of groundwater dependency in many SADC countries, in rural areas in particular;
- The variety of geohydrological contexts;
- High levels of poverty, gender disparities, social exclusion and pollution; and
- Relatively low levels of state capacity – skills, infrastructure and finance.

It sets out the *minimum* requirements that support the delivery of national, regional and international developmental goals, including the Sustainable Development Goals, meeting basic human needs to water, energy and food (the WEF nexus), and the protection of ecosystems that are dependent on groundwater.

The sections below describe, at a high level, what is considered to be the minimum best practice for policy, legislation and subsidiary legislation, regulations and standards for effective groundwater management. For a more detailed description of the desired future state, see **Appendix C**.

The **minimum policy requirements** that should be in place are:

- A long-term policy to protect groundwater by preventing pollution and overuse.
- The social, economic and environmental values of groundwater are all recognised.
- The human right to water is recognized and a rights-based approach to groundwater management is taken.
- Groundwater is recognised as a highly important source of domestic and agricultural water supply and a key resource for poverty alleviation, food security, and the sustainable economic development of rural areas.
- The biophysical and ecological linkages between ground and surface water for their use, protection and management are recognised, including land use zoning for groundwater protection and recharge (conjunctive use).
- The importance of the maintenance of the ecological integrity of wetlands in groundwater management is recognised (recharge zones).
- Intersectoral collaboration is promoted and facilitated.
- The need for adaptive management is recognised.
- The roles of various stakeholders and water users in groundwater management is recognised and participation of stakeholders is promoted and facilitated.
- An apex body that is responsible explicitly for GW management and playing the role of custodian/trustee on the part of the state is clearly defined.
- Effective institutional arrangements are coordinated at transboundary, national and local levels.
- Public access to geohydrological data held by the state is promoted and facilitated.
- Additional environmental principles necessary to protect and sustain groundwater are mandated, including: the precautionary principle, the principle of gender equity and social inclusion (GESI), the principle of subsidiarity, and the principle of intergenerational equity.

The **minimum legislative requirements** that should be in place are those that explicitly addresses the use, management, and protection of groundwater and provides the necessary tools for the state to regulate, manage, control, protect and develop groundwater resources in conjunction with surface water resources. At a minimum, legislation and/or subsidiary regulations should:

- Provide the status of groundwater noting that all water has a consistent status in law, irrespective of where it occurs, and there is explicit reference to groundwater and conjunctive use management; and recognise the human right to water recognized in groundwater legislation, facilitating prioritization of drinking water and basic human needs, as well as small-scale users.
- Regulate groundwater quantity by providing conditions for accessing groundwater through water use authorisations system that does not discriminate (especially against the rural poor), is not tied exclusively to land tenure and enables effective compliance monitoring and enforcement.
- Provide groundwater protection mechanisms that includes regulating pollution (point source and non-point source), regulates depletion, regulates abstraction and recharge (usually via permitting) and provides for the sustaining wetlands;
- Enables integrated planning through specifying the need for long term plans (at catchment or basin level) to ensure the sustainable use of groundwater, including drought management plans and cross-sectoral coordination.
- Make provision for institutional arrangements including the mandate, competence and power of the relevant authorities, enabling the integrated management of groundwater and surface water resources, engaging in the arbitration of competing demands and diverging interests regarding groundwater abstraction and use, and support the collaborative engagement with other sector authorities, competent for public health, land-use planning, soils management, and waste management.
- Support effective stakeholder engagement through specifying when and how stakeholders, the public and/or other water users are to be engaged in the development of laws and regulations, planning, decision making and self-management regarding groundwater and should specifically address the issue of the involvement of women and youth in decision-making and the implementation of groundwater supply schemes.
- Provide for Monitoring and data collection to support regulation including protocols for data collection, management, exchange and dissemination, including standardization and harmonization of data, as well as national monitoring and information systems for the management of data and information.
- Regulate to ensure water conservation and efficiency of use.
- Support compliance and enforcement through clear mechanisms for promoting compliance with groundwater regulations through enforcement provisions that enable inspections, the imposition of fines and/or additional administrative penalties and other instruments to address failure to comply with the law.
- Conflict resolution mechanisms and/or the right to appeal.
- Enable the development of regulations on any relevant matter in the legislation to regularise aspects of groundwater management and incentivise appropriate use of groundwater resources.

The actual **requirements for subsidiary regulation** will differ from country to country, according to their own National Legislation. However, it is important to understand the extent to which critical issues around groundwater management have been translated into regulations. Below are some examples of how this could look.

- Subsidiary legislation or regulations pertaining to use, protection including on-site sanitation, borehole drilling, and appropriate financial and economic regulatory tools e.g. water pricing.
- Clear protocols and standards on data collection and storage.
- Templates for municipal by-laws.
- Community management of groundwater and community participation in groundwater management.

From an **institutional perspective**, it is critical that countries have as a minimum, a dedicated Ministry for water resource management, which is also the custodian for ground water management. Noting that the groundwater is a localised resource, decentralised institutions at trans-boundary, catchment and local government level are crucial, where groundwater management fits into overall mandate for water resource management

### 3. POLICY

#### 3.1 Evolution

According to the current National Water Policy (2012) of Zimbabwe, traditionally, development and utilisation of water resources were linked to the land ownership and use. Water rights were attached to land ownership and were in perpetuity. The pre-independence policies were developed in line with the available legislation which was silent on groundwater management issues since surface water was the main source of water. The inequitable distribution of land and water scenario was inherited in 1980, post-independence. This resulted in heated debates on availability, allocation and distribution of water resources. Government was therefore compelled to undertake water sector reform programme which resulted in the formulation of the 2004 Water Policy. Among the outcomes of the reform programme was the formulation of the Water Resources Management Strategy which was based on the principle of Integrated Water Resources Management (IWRM). The Water Policy of 2004 was never passed by Cabinet, but it gave groundwater a new impetus as IWRM was recognised to play a more important role and forms the basis of the formulation of the current Water Act (1998).

#### 3.2 Policies to support groundwater management

Policy determines what and how things should be done in any given sector. The current Water Policy (2012) was formulated based on the Water Policy of 2004 through an inclusive consultative process and it incorporates policy principles that guide aspects of water resources development and management. The policy details that support groundwater management are as follows:

- **Data collection, management and research** – All boreholes in the country must be registered and groundwater related data shall be kept in database created and managed by the relevant ministry or government department. Data will be made available through an information management system that is usable for groundwater management, research, issuance of borehole and groundwater use permits, public information and risk assessments. The custodian of the database is database is Excel based and is developed, kept and managed by Zinwa. Although the legislation makes it illegal to withhold groundwater data, under the current setup, there submission of data is voluntary and is not enforced. Data is currently available to users free of charge. However, the data is in some cases incomplete and hence may be difficult to use or apply.
- **Integrated water resources management** – This is meant to improve equity of access to water, improve efficiency of water use, environmental protection, sustainability and stakeholder participation;
- **Water and the hydrological cycle** – Recognise groundwater as part of the global hydrological cycle;
- **Ownership of Water** – All water is vested in the State President hence there is no private ownership of water. Exploitation requires a permit from the State except when exploited for environmental or primary purposes;

- **Catchment as a unit of water management** –Hydrological parameters and groundwater levels must be managed on a catchment level, that is, as a catchment hydrological cycle;
- **Water for Primary needs** – Water required to meet human basic needs, called primary water, shall be given the first and highest priority in the provision of water supply services. Water is a basic human right and does not require a permit to develop or exploit;
- **Water and Environment** – Environment is recognised as an important user of water. All environmental allocations to be accommodated in catchment plans when allocations for other uses are made;
- **Water demand management** – Water is a finite resource hence the demand must be managed through pricing mechanisms, abstraction monitoring, allocations and licensing, permits and water use efficiency;
- **Water pollution** – Pollution reduces quantity of water available for use hence water users have a duty to protect water sources and to ensure that the quality of the water they return to the system is not harmful to the environment. EMA uses the polluter pay principle and polluters have a responsibility for clean-up and restoration;
- **Water Institutions and decentralisation** – Any activity that can be done by a lower level decentralised institution should not be done by central authority. Central authority must perform tasks that cannot be performed by a local authority. Institutions must have clear, unique and unambiguous mandates and without conflicting interests. Coordination, communication and interaction between all stakeholders is encouraged;
- **Water in growth and development** – Water is essential for national growth and economic development and hence is an economic good;
- **Water pricing** – Water prices will be based on user pays principle in order to achieve efficiency and should be determined on the basis of thorough analysis of the price of water on the water dependent sector or stakeholders;
- **Stakeholder participation** – Effective participation of stakeholders in decision making is vital for management and sustainability of water resources development and utilisation; and
- **International waters** –Dialogue, cooperation and interaction with other riparian states is encouraged as it promotes optimum development and use of shared water resources

### 3.3 Gaps and challenges identified

#### Gaps identified

Most of the policy requirements for groundwater management are there in the National Water Policy except for the following:

- Policy mechanisms of key stakeholders relating to groundwater management are not aligned and synchronised.
- Gender issues related to equity in access, use and management of groundwater are weak and ineffective



### Challenges identified

- **Lack of explicit policies on groundwater** - The Zimbabwe National Water Policy of 2012 is an all-encompassing policy framework. However, the policy makes a reference to water resources in general and it is not explicit to groundwater. There is a risk that groundwater may be overshadowed by surface water as has been the case over the years;
- **High staff turnover within key institutions** – There is lack of trained staff in key institutions both in terms of numbers and depth of relevant expertise. The current staffing levels at Zinwa are far below expected and as such cannot cope with the required levels of groundwater management. Other subsidiary organisations like catchment councils, Environmental Management Agency, Rural and Urban councils and Standards Association of Zimbabwe do not have groundwater experts in their establishments.
- The **time series data** for staff turnover at Zinwa is not available. However, data on the current establishment as it relates to groundwater management is available and is presented in the table below. Also presented is the number of posts filled per position level.

**Table 1: Vacancy level for groundwater management**

Position level	Current Establishment	Positions Filled	Vacancy Level
Hydrogeologist	14	2	86%
Groundwater Technician	12	0	100%
Groundwater Technical Assistant	12	1	91%
Groundwater Monitoring Observer	8	4	50%

The table above shows that the vacancy level is too high and the available staff members cannot cope with the demands for sound groundwater management in the country. It must however, be noted that at its inception in year 2001, Zinwa had nine (9) hydrogeologists and all have since left for employment with other local, regional or international organisations. From 2001 to date, Zinwa has employed up to twenty-four (24) hydrogeologists but only two (2) are still with the organisation.

- **Weak institutional linkages** – Due to high staff turnover of groundwater practitioners at key groundwater management institutions, the institutional linkages are very weak. There is limited cooperation, and if anything, the institutions seem to be working independently with different goals and objectives.

### **3.4 Enablers required to unlock these gaps/challenges**

**Table 2: Enablers required to unlock the policy gaps and challenges**

Groundwater gap/challenges	Enablers
<p><b>Non-Alignment and synchronisation of policy mechanisms of key stakeholders</b></p>	<ul style="list-style-type: none"> <li>▪ Key stakeholder policies that relate to groundwater management need to be aligned and synchronised. This will enhance collaboration and cooperation among the stakeholders;</li> </ul>
<p><b>Ineffective gender issues relating to equity</b></p>	<ul style="list-style-type: none"> <li>▪ Ensuring women and children participation and coordination by key stakeholders in order to strengthen groundwater management initiatives being implemented; and</li> <li>▪ Ensuring effective programming in gender equity and training in water resources management from grassroots level to the highest level possible.</li> </ul>
<p><b>Lack of explicit policies</b></p>	<ul style="list-style-type: none"> <li>▪ The policy document must be revised to explicitly talk about groundwater rather than water resources in general. This must be done to ensure that there is no doubt to the implementing institutions if the policy relates to surface water only or both surface water and groundwater;</li> </ul>
<p><b>High staff turnover within key institutions</b></p>	<ul style="list-style-type: none"> <li>▪ Zinwa must be adequately staffed in order to cope with the demands for the provision of expert services.</li> <li>▪ They also need to re-equip the organisation both in terms of hardware and software to enable them to implement the groundwater policies.</li> <li>▪ Their key implementing partners need to have mid-level groundwater expert in their organisations so that they have someone in their ranks who understands and is passionate about groundwater issues;</li> </ul>
<p><b>Weak Institutional linkages</b></p>	<ul style="list-style-type: none"> <li>▪ All institutions have to give the same priority to groundwater management issues.</li> <li>▪ Institutional mandates must complement each other's efforts and not be a source of conflict and Zinwa must take the lead in driving groundwater management initiatives.</li> </ul>

## 4. LEGISLATION

### 4.1 Evolution

Water sector reforms have been going on in the country for over 100 years (NWP 2012). The Water Ordinance of 1913 vested all public water in the State. The principle of first come first served was incorporated in the legislation for use during drought periods. The primary water rights were protected in the British South Africa Company (BSAP) Charter while other users were regulated by the riparian doctrine of the British Common Law. Under this riparian doctrine, only those with land that had a river or stream running through or bordering the land had a right to abstract water from it. A new Water Act was crafted in 1927 and this gave the Water Court authority to issue water rights. Under this Act, water became privately owned but was linked to land ownership. In 1925, land tenure system, allocated 33% of the land to the Native Reserve Areas (present day communal areas), and 50% of the land was reserved for the white settlers. This resulted in a dual agrarian system with black farmers occupying land with poor soils and located in low rainfall areas with poor access to water. White settlers occupied fertile land in high rainfall areas or had dedicated dams to supply their farms hence they had good access to water. The inequitable distribution of land and water benefitted commercial farmers who had title deeds.

The subsequent water act was the Water Act of 1976. This was a better legislation in that it controlled any form of water use and was aimed at systematic water allocation among users. Water for primary use was recognised as a basic human right hence did not require a right. Any water that was used for commercial purposes required a water right. Unfortunately, the water right was issued in perpetuity on a first come first serve basis and gave little consideration to groundwater resources. Where water resources were fully allocated, a new water right could not be issued even if there was a need or if any water right holder was not using their water. The act was amended several times in an attempt to align it with modern global trends in water use and was carried into post independent Zimbabwe.

From 1994, the Government of Zimbabwe decided to undertake a major Water Sector Reform Programme in order to address the inequitable access to water resources that were enshrined in the Water Act of 1976 and to incorporate the principles of IWRM in the new water legislation. The programme established a new Water Act of 1998, Catchment and Sub-Catchment Councils, and the Zinwa Act of 1998.

### 4.2 Legislation to support groundwater management

Currently, groundwater development, use and management are primarily governed by the Water Act of 1998, Zinwa Act of 1998 and the EMA Act of 2002 as administered by the Ministry of Environment, Water and Climate. The other important ministries and corresponding Acts in groundwater management are presented in Table 3 below:

**Table 3: Key Ministries with a groundwater management role**

Ministry	Act
<b>Ministry of Mines and Mining Development</b>	Mines and Minerals Act 1996
<b>Ministry of Local Government, Public Works and National Housing</b>	Urban Councils Act 1996
<b>Ministry of Local Government, Public Works and National Housing</b>	Rural District Councils Act 1996
<b>Ministry of Health and Child Care</b>	Public Health Act

Each Act is supported by a corresponding policy document. According to the Water Act (1998), there is no private ownership of water. All water is vested in the State President. The Act is founded on economic efficiency, environmental sustainability and equity of use. The Local Authority bylaws on groundwater use have stipulated that boreholes in high density suburbs (<300m<sup>2</sup>) will be considered illegal. Of huge concern is the issue of donor-funded and drilled boreholes in high density suburbs in urban areas. Whilst Local Authorities accept ownership of these donor-drilled boreholes in high density suburbs, they do not maintain them for various reasons, one of which is that they erode revenue collection since such borehole water is free.

The custodian of the Water Act and its provisions is the minister in the Ministry of Environment, Water and Climate whose functions include:

- To develop policies that guide the orderly integrated planning of the optimum development, utilisation and protection of the country’s water resources in the national interest;
- To ensure availability of water to all citizens for primary purposes and to meet the needs of aquatic and associated ecosystems particularly when there are competing demands for water; and
- To ensure the equitable and efficient allocation of available water resources in the national interest for the development of the rural, urban, industrial, mining and agricultural sectors.

### **4.3 Gaps and challenges identified**

The gaps that were identified in the Water Act of 1998 as a legal document with respect to water resources management include the following:

- **Lack of explicit legislation on groundwater** – The legislation talks about water resources in general, and while it may apply to groundwater issues, the Act should be more specific and make a distinction where necessary. This suspicion is confirmed in Section 13 which deals with contents of catchment plans. This section talks to surface water issues and leaves out all issues to do with groundwater management at catchment level. Hence it cannot be assumed that where water resources are mentioned in the Act, groundwater is included;
- **Lack of legislation on transboundary groundwater aquifers** -Transboundary aspects of groundwater are not addressed in the legislation; and
- **Lack of alignment of legislation that support groundwater management** – A number of Acts support the management of groundwater in Zimbabwe. However, these Acts are not aligned and synchronised hence difficult to enforce in a collaborative manner.

Some gaps in the Water and Zinwa Acts have already been addressed through published Statutory Instrument 206 of 2001 (Water Permits Regulations, 2001) which was further amended by published Statutory Instrument 90 of 2013 (Water Permits Amendment Regulations, 2013).

#### 4.4 Enablers required to unlock these gaps/challenges

The table below reflects the enablers required to unlock the identified gaps and challenges being experienced.

**Table 4: Sectoral Legislation and implications for groundwater management**

Groundwater gap/challenges	Enablers
<b>Lack of explicit legislation on groundwater</b>	<ul style="list-style-type: none"> <li>▪ The Water Act (1998) needs to be recanted so that it explicitly talks to groundwater management issues as opposed to the current state where it is assumed to incorporate groundwater management issues</li> <li>▪ New legislation based on conjunctive water resources management should be developed</li> </ul>
<b>Lack of legislation on transboundary groundwater aquifers</b>	<ul style="list-style-type: none"> <li>▪ Legislation that deals explicitly with transboundary groundwater issues need to be crafted and enacted</li> <li>▪ Zinwa must be capacitated to deal with transboundary aspects of groundwater management; and</li> </ul>
<b>Lack of alignment of legislation that support groundwater management</b>	<ul style="list-style-type: none"> <li>▪ All legislation that support groundwater management must be aligned and synchronised so that their provisions promote collaboration and cooperation between key stakeholders.               <ul style="list-style-type: none"> <li>○ Whilst standards of borehole drilling are in place, they are currently voluntary, hence, there is need to put in place regulations that govern and enforce the standards.</li> <li>○ Need for redefining ‘Primary water use’ in the context of urban setups and current trends in groundwater abstraction (bulk water vending in urban areas).</li> </ul> </li> </ul>

## 5. STRATEGY AND GUIDELINES

### 5.1 Evolution

Strategies to support groundwater development were initiated during Phase 1 of the water sector reform sector (1994 to 2002) following the adoption of IWRM principles on water governance. In line with the IWRM principles, the Water Act (1998) encourages improved stakeholder participation in managing water resources within the areas they operate in. The catchment emerged as an acceptable complete hydrological unit of analysis and management of water resources and integrated catchment management became the preferred practical operating approach. In line with this approach, and in accordance with the Water Act (1998), Zimbabwe was partitioned into seven (7) catchments and forty-seven 47 sub-Catchments and catchment-based water management structures emerged (Chikozho, no date). During Phase 1, the first Water Resources Management Strategy was formulated but was never formally passed by Cabinet hence could not be implemented.

### 5.2 Strategies and guidelines to support groundwater management

Water sector has been in decline and in order to revive it, a number of strategies and guidelines have been put in place to support groundwater management and these include the following:

- **Development of catchment plans in accordance with the Water Act (1998)**

This is a requirement in the Water Act (1998) and the purpose of the plan is to ensure optimum development and utilisation. Contents of the plan must be improved to include explicitly management of both surface water and groundwater;

- **Community based management of water resources in rural areas**

The concept of Community Based Management (CBM) is intended to give rural communities responsibility over development of their water and sanitation services. The user community takes responsibility of operation and maintenance of their facilities hence enhances community management and ownership of water and sanitation provision process (NAC 2005);

- **Development of National Water Resources Master Plan (NWRMP)**

The general objective of this NWRMP is to ensure a sustainable water resources development, utilisation and management in line with National Water Policy and the country's short term, mid-term and long-term development plans. The plan aims to provide a full understanding of the quantity, quality and spatial distribution of the groundwater resources available in Zimbabwe; characterise the different uses and users; determine the resilience of the groundwater resources to climatic variability and indicative adaptation and mitigation measures to climate change;

- **Use of standards for development, maintenance and management of groundwater resources**

The following standards, known as ZWS 678:2013 standards have been developed and are currently in use:

- **Glossary of terms** - covers terms and definitions applicable to water boreholes;

- **Location and siting of boreholes** - covers requirements for the location and siting of boreholes;
- **The design, construction and drilling of boreholes** - covers requirements for drilling, design and construction of wells/borehole;
- **Pumping test of water wells/boreholes** – covers requirements for pumping test of water wells/boreholes in order to obtain information about its possible long-term pumping rate;
- **The design, selection and performance of pumping equipment for production wells/boreholes** – covers the design, selection and performance of pumping equipment intended for production wells/boreholes;
- **The installation and commissioning of pumping equipment for production wells/boreholes** – covers installation and commissioning of pumping equipment intended for production boreholes;
- **The rehabilitation of water wells/boreholes** – covers specific methods to be applied for the rehabilitation of water boreholes;
- **The management of water wells/boreholes** – covers the design, selection and performance of pumping equipment intended for production boreholes; and
- **The decommissioning of wells/boreholes** – covers methods to be applied for decommissioning of all types of water wells/boreholes to protect groundwater resources

### 5.3 Gaps and challenges identified

- **Decline in revenue collection**

There is limited will and, in some cases, capacity to pay for water services provision due to a number of reasons including political connections; decline in demand resulting from decline in land under irrigation for multi-national companies; water prices which are below cost of water services provision; poor economic circumstances and poor service delivery.

- **Inadequate information and data collection**

With declining revenue collection, funding for information and data collection activities is not always available yet data and information is required for effective groundwater management. Groundwater practitioners are by law required to submit to Zinwa information and data pertaining to research, groundwater assessments and borehole drilling and testing activities they undertake. However, submissions are minimal and in the absence of groundwater practitioner’s association, it is difficult to enforce. Inadequate information and data collection seriously reduce the ability to manage resources (NWP, 2012). Groundwater quantification and monitoring is therefore not being prioritised. However, it is the duty of sub-catchment councils to carryout monitoring, but current capacity is limited whilst ZINWA mainly monitor 3 major aquifers (Lomagundi, Nyamandlovu and Save).

- **Lack of enforcement and collaboration among stakeholders**

Stakeholders are operating independent of each other and most subsidiary stakeholders to Zinwa, the apex body for groundwater management, do not have groundwater management objectives

as part of their mandates. In some cases, roles are duplicated between stakeholders resulting in conflicts.

- **Inadequate legislation to support strategies**

The Water Act (1998) in its current form does not fully and explicitly cover all the requirements for sound groundwater management.

#### 5.4 Enablers required to unlock these gaps/challenges

The table below gives the enablers required to support the implementation of the strategy and guidelines implementation.

**Table 5: Enablers required to support strategy and guidelines implementation**

Groundwater gap/challenges	Enablers
<b>Decline in revenue collection</b>	<ul style="list-style-type: none"> <li>▪ Water user associations must be constituted and used as platforms for lobbying for water services payments and revenue collection in line with the “user pay policy”</li> <li>▪ Standard of water services delivery has to improve, and political interference has to stop.</li> </ul>
<b>Inadequate information and data collection</b>	<ul style="list-style-type: none"> <li>▪ Groundwater practitioners and water user associations must be constituted and used as platforms for lobbying for information and data collection. ZIWASRA, once established will also help in this regard.</li> </ul>
<b>Lack of enforcement and collaboration among stakeholders</b>	<ul style="list-style-type: none"> <li>▪ Government, in line with international best practice and (NWP 2012), has committed to establish a water sector regulator, the Zimbabwe Water and Sanitation Regulatory Authority (ZIWASRA).</li> <li>▪ The authority will take on Water Resources Management (WRM) and Water Supply and Sanitation (WSS) regulatory functions. One of its responsibilities is to ensure and promote cooperation and collaboration among all water service delivery practitioners.</li> <li>▪ Strengthening the National Action Committee (NAC) on Water, Sanitation and Hygiene in order to manage institutions that are into water resources management.</li> </ul>
<b>Inadequate legislation to support strategies</b>	<ul style="list-style-type: none"> <li>▪ Some of the inadequacies have already been noted and are addressed through Section 119 of the Water Act which deals with Regulations. Water Permits Regulations, 2001, were drafted and published as Statutory Instrument 206 of 2001.</li> </ul>



Groundwater gap/challenges	Enablers
	<ul style="list-style-type: none"> <li>▪ These regulations are very explicit in terms of groundwater development and management. They have already been amended by insertion of Statutory Instrument 90 of 2013 which further covers emerging issues in the water sector. Civil society advocacy and pressure groups</li> <li>▪ These amendments, where necessary, must continue to be made in line with developments in the water sector and international best practice. This entails the review of these existing water regulations (Statutory Instruments, Policies and Acts) to adequately address issues of groundwater governance.</li> </ul>

## 6. INSTITUTIONAL FRAMEWORK

### 6.1 Evolution

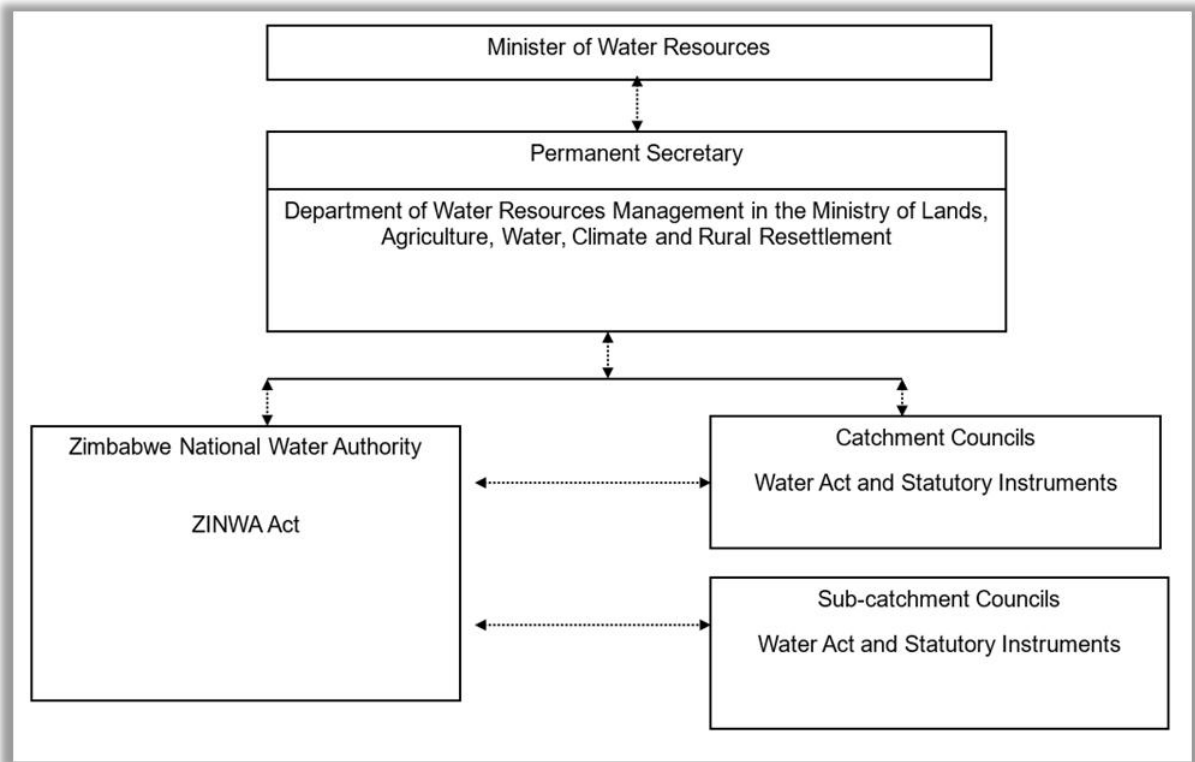
Before independence in 1980, water sector issues were administered by one institution, the Water Court whose main function was to issue water rights as enshrined in the 1913 Water Ordinance and the Water Acts of 1927 and 1976. This scenario was inherited into post-independence Zimbabwe. However, the inequitable distribution of land and water resulted in a push by government to have water sector reforms. As a result, the Water Act of 1976 was repealed, and the Water Court was also abolished. This led to the establishment of the Water Act of 1998 which in turn established Catchment and Sub-Catchment Councils and the Zinwa, a new water management institution. This was done to embrace adopted key principles of Integrated Water Resources Management which formed the basis for the development of the Water and Zinwa Acts of 1998.

### 6.2 Institutional arrangements to support groundwater management

Currently, the hierarchy of the main water resources management institutions are shown in Figure 5 below. The key roles and responsibilities of these institutions regarding groundwater resources management are summarised as follows:

#### **The Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement through the Department of Water Resources Management**

- Develop policies to guide optimum development, utilisation and protection of water resources;
- To ensure availability of water to citizens for primary use and the environment when there are competing demands for water; and
- To ensure equitable and efficient allocation of available water resources for development of rural, urban, industrial, mining and agricultural sectors.



**Figure 5: Organogram of the main water resources management institutions**

**Table 6: Roles and responsibilities of institutions in the main water resources management**

Level	Institution	Roles and Responsibilities
National	Zimbabwe National Water Authority	<ul style="list-style-type: none"> <li>▪ To advise the Minister on formulation of national policies and standards on water resources planning, management, development, water quality, pollution control, environmental protection, hydrogeology, borehole drilling and water pricing;</li> <li>▪ To provide water services on a commercial basis;</li> <li>▪ To encourage and assist local authorities and catchment councils to develop and manage water resources within their jurisdiction especially with regards to potable water and waste water disposal;</li> <li>▪ To provide technical assistance, personnel, advisory and training to other key institutions involved in water resources management; and</li> </ul>

Level	Institution	Roles and Responsibilities
		<ul style="list-style-type: none"> <li>To undertake research studies and develop databases, promote mechanisms for management of international water resources.</li> </ul>
<b>Regional</b>	Catchment Councils	<ul style="list-style-type: none"> <li>To prepare, with the assistance of Zinwa, catchment outline plans detailing major water users, volumes abstracted, water quality, water resources developments and environmental flows;</li> <li>To determine applications and grant water use permits;</li> <li>To resolve water conflicts in their areas of jurisdiction;</li> <li>To regulate and supervise water use rights; and</li> <li>To supervise Sub-catchment councils.</li> </ul>
	Sub-catchment Councils	<ul style="list-style-type: none"> <li>To regulate and supervise exercise of rights to water including groundwater use;</li> <li>To monitor water flows, use and discharge;</li> <li>To collect revenue for permits issued; and</li> <li>To assist in data collection and catchment planning.</li> </ul>

The other institutions, whose operations have a subsidiary water resources management function, interact directly with any institution in the Organogram presented in **Figure 4** above as and when it is necessary in discharging their duties. These institutions include the following:

- Standards Association of Zimbabwe;
- Academic institutions (University of Zimbabwe, Civil Engineering/Waternet);
- National Coordination Unit (NCU) (Subsidiary of National Action Committee – NAC);
- Environmental Management Agency (EMA);
- Private groundwater practitioners (Hydrogeological Consultants, Drillers);
- District Development Fund (Under Office of the President and Cabinet);
- Urban Local Authorities;
- Rural Local Authorities;
- Water user groups; and
- Non-Governmental Organisations.

These institutions perform the following water resources management functions summarised in **Table 7** below:

**Table 7: Institutional Groundwater Resources Management Functions**

Institution	Groundwater Resources Management Function
<b>Zinwa including Catchment and Subcatchment Councils</b>	Groundwater planning, protection, development, water use authorisation, compliance monitoring and enforcement, groundwater quality and quantity monitoring, information management and databases, research and training
<b>Standards Association of Zimbabwe</b>	Development of standards for development, maintenance and management of groundwater resources
<b>Academic Institutions</b>	Groundwater teaching and research
<b>National Coordination Unit</b>	Institutional coordination, constituting water user associations or water point committees
<b>EMA</b>	Groundwater quality and protection, compliance monitoring and enforcement, education/advisory
<b>Urban Local Authorities</b>	Groundwater use and protection
<b>Rural Local Authorities</b>	Groundwater use and protection
<b>District Development Fund</b>	Groundwater development and protection
<b>Private Groundwater Practitioners</b>	Groundwater development, protection and research
<b>Non-Governmental Organisations</b>	Groundwater development, maintenance and protection
<b>Water User Groups</b>	Groundwater use, protection and infrastructure maintenance

The water user groups in commercial farming areas include Farmers' Unions and used to be relatively active prior to the land reform program especially on issues relating to surface water. Groundwater issues were and continue to be dealt with at an individual basis. In rural areas, the water user groups are mainly specific to water points, including boreholes, wells or springs and are formed under the community-based management initiatives. Not every water point has a committee and where they are available, they are not very functional. Where they are functional they deal mainly with water development, protection and pump maintenance.

Urban Councils are empowered through the Urban Councils Act Chapter 29:15 as amended in November 2002 and subject to Water Act of 1998 Chapter 20:24 to enact by-laws for their areas of jurisdiction that:

- Protect all water resources from any form of pollution;
- Prohibit or regulate sinking, construction and deepening of wells and boreholes;
- Prohibit or regulate use of water from wells and boreholes;
- Prohibit and regulate connection of any wells or boreholes to water mains or water supply of the council.

While there are such legal provisions for groundwater management, there is no enforcement of the by-laws.

### 6.3 Gaps and challenges identified

#### Gaps Identified

- The major gap identified is that the areas of jurisdiction of the Catchment and Sub-Catchment Councils are based on surface water and most of their functions are not explicit to groundwater resources management.

#### Challenges Identified

- **Duplication of roles** - The provisions of the Water and Zinwa Acts are commendable; however, there are other institutions like EMA (water pollution control), Standards Association of Zimbabwe (custodian of standards), District Development Fund, Rural and Urban Councils whose functions are similar to those offered by Zinwa. This results in duplication or triplication of roles among institutions which are supposed to be collaborating thereby causing conflicts. Duplications occur in the following functions:
  - a. Regulatory;
  - b. Planning and development; and
  - c. Quality monitoring and assessments.
- **Lack of alignment of stakeholder objectives** – The objectives for involvement in groundwater resources management vary from institution to institution especially those that are not under direct supervision of the Ministry of Environment, Water and Climate. They tend to want to protect their own interests which have little or no effect on groundwater management issues. For example, the Standards Association of Zimbabwe is involved with generation and sale of groundwater standards basically for revenue generation as opposed to groundwater management. Urban councils want to register boreholes within their jurisdiction in order to collect levies and not necessarily for groundwater management.
- **Lack of collaboration between key institutions** – There is lack of coordination and collaboration between key institutions. For example, data from boreholes drilled for or under key institution is supposed to be submitted for input by Zinwa, but the data is not forthcoming.
- **Lack of water management institutions below Subcatchment level** - Lack of functional groundwater management stakeholders below the Subcatchment level.

### 6.4 Enablers required to unlock these gaps/challenges

The following enablers are required to unlock the institutional gaps and challenges.

**Table 8: Enablers required to unlock the institutional gaps and challenges**

Groundwater gap/challenges	Enablers
<b>Functions are not explicit to groundwater resources management.</b>	<ul style="list-style-type: none"> <li>▪ Developing more guidelines that deal explicitly with groundwater resources management in line</li> </ul>

Groundwater gap/challenges	Enablers
	with the provisions of Section 119 of the Water Act and Section 50 of the Zinwa Act.
<b>Duplication of roles</b>	<ul style="list-style-type: none"> <li>▪ Need to streamline roles or reduce the number of role players and make sure that there are no duplications among institutions involved through:               <ul style="list-style-type: none"> <li>○ harmonising data collection and data collection tools by respective institutions</li> <li>○ capacity development of institutions responsible for groundwater and stakeholders</li> <li>○ Awareness raising on importance of groundwater</li> </ul> </li> </ul>
<b>Lack of alignment of stakeholder objectives</b>	<ul style="list-style-type: none"> <li>▪ Stakeholders, objectives have to be clearly stated and should be complementary to the overall objective of groundwater resources management</li> </ul>
<b>Lack of collaboration between key institutions</b>	<ul style="list-style-type: none"> <li>▪ Structures for cooperation and collaboration between stakeholders must be revived, put in place and operationalized in order to achieve an integrated approach to groundwater management.</li> </ul>
<b>Weak and under-capacitated institutions and institutional linkages</b>	<ul style="list-style-type: none"> <li>▪ The National Action Committee (NAC) on Water, Sanitation and Hygiene should be strengthened and capacitated in order to manage institutions that are into water resources management.</li> </ul>
<b>Lack of water management institutions below Subcatchment level</b>	<ul style="list-style-type: none"> <li>▪ Given the prevalence of groundwater use by largely rural populations, it is essential to strengthen community-based/localised water management institutions such as borehole committees.</li> </ul>

## 7. CHALLENGES TO IMPLEMENTATION

The key challenges limiting the ability to deliver on good groundwater management include the following:

- **Competing national programmes** – implementing water reform strategies was misconstrued at the time to go against the land reform programme. The two were implemented practically at the same time and given the momentum of the land reform programme, water sector reforms initiatives could not be implemented;
- **Lack of Funding** – One of the major challenges faced in setting up and making these institutions operational is lack of funding. Institutions required funding in order to perform their duties of water services provision and water management including enforcement of legislation. The water sector reforms which ushered in the Water and Zinwa Acts of 1998 were funded by the Governments of the United Kingdom, Germany, Norway, and the Netherlands. Hence the processes were dependent on donor funding. However, before the launch of the Catchment Councils, donors withdrew their funding owing mainly to political situation in the country and the land reform programme. This happened at a time when the Catchment Councils were not yet financially stable and financial inflows to the Water Fund were still very low as new farmers were reluctant to pay for water use. This slowed the momentum of the water reforms.; The Water Fund was established by an Act of Parliament, namely Zinwa ACT of 1998 (Chapter 20:25) to fund the general development and management of the water resources of Zimbabwe. The money was to be generated through water levies on any person holding a permit, fees, loans, government contributions through the Minister responsible for Finance and any money accrued to the Fund in terms of the Zinwa Act of 1998 or otherwise. The minister responsible for water resources would then identify and fund areas of greatest need in the water sector.
  - The Water Fund had potential to collect substantial revenue, however, inflows have been minimal due to:
  - Withdrawal of donor funding;
  - Resettled farmers refusing to pay for permits since their predecessors were not paying for permits prior to the land reform programme and uncertainty on occupancy since they were given the land on lease by government;
  - Economic decline resulting in less and less money being allocated to Water Fund from national budget; and
  - Lack of political will encouraged by the belief that water is a God given resource hence no need to pay to access it.

The diminishing sources of contributions into the Water Fund therefore meant that there was very little money available to support water services provision and management (Makurira, H., Mugumo, M. no date).



- **Financial instability** - the accelerated decline in the economy of the country following the land reform programme, meant that government could not fund the water sector reforms from the treasury. In addition, the new land owners are reluctant to pay water levy although they took over water rights allocated to their farms. They refused to pay for water because the water rights they inherited were not paid for before the land reform;  
In Zimbabwe, Water Rights were replaced with Water Use Permits through the enactment of the Water Act of 1998. The permits are issued for a limited period and can only be renewed subject to water availability and evidence of efficient use by the permit holder. Any holder of a water use permit who uses more water than allocated in their permit shall be guilty of an offence and liable to a fine or to imprisonment or both such fine and imprisonment.
- **Lack of expertise within key institutions** – there are staff shortages in key institutions both in terms of numbers and depth of relevant expertise. The current staffing levels at Zinwa cannot cope with the expected levels of groundwater management. Other subsidiary organisations like catchment councils, Environmental Management Agency, Rural and Urban councils and Standards Association of Zimbabwe do not have groundwater expertise in their establishments;
- **Weak institutional linkages** – The various Acts that deal with water resources are not aligned and synchronised. As a result, the key institutions that relate to these Acts do not give the same priority to groundwater management issues and do not share common water resources management goals and objectives. Institutional mandates do not encourage collaboration and cooperation among institutions and are not complementary thereby resulting in conflict. Zinwa seems to have abrogated its role of leading groundwater management issues.
- **Political interference** – politicians survive “through the law of popularism”. They try and frustrate any initiatives which render them “unpopular”. For example, water permit payment defaulters are protected from paying penalty or from disconnections, and in some cases water management practitioners are denied access to some properties. Project choice and implementation are driven by political balance rather than economics or resource management initiatives.
- **Lack of adequate legislation**- the Water Act is technically sound in a broad sense. However, as the delegation of duties cascades down to Zinwa and Catchment Councils’ specific roles, groundwater is not explicitly mentioned in the legislation. It is as if water resources mean surface water only. There is no legislation on transboundary groundwater resources.
- **Lack of integration between surface water and groundwater** – Groundwater issues have historically been lagging behind surface water. The interconnectivity between surface water and groundwater is not fully recognised. For example, the conjunctive use idea of storing surface water in a groundwater basin in wet years and withdrawing it in dry years as an approach to improve water security has not been envisaged.



- **Weak stakeholder participation** – Stakeholders have a role to play at all levels of decision making in developing and managing groundwater systems. In Zimbabwe, stakeholders including water user groups are not effectively participating, hence the sense of ownership of groundwater management systems is weak and barely supported.

## 8. ACTION PLAN

The MoSCoW method of prioritisation has been used to develop the action plan. This method identifies the *Must have*, *Should have*, *Could have*, and *Won't have* elements for the Groundwater Management Regulatory Framework.

Table 9: Action Plan “Must Haves”

Prioritisation	Element	Description
<b>Must have</b> <i>those elements of the regulatory framework that are critical</i>	<b>Policy</b>	<ul style="list-style-type: none"> <li>National Water Policy and Catchment outline plans to be produced regularly in line with the Water Act 1998;</li> </ul>
	<b>Legislative</b>	<ul style="list-style-type: none"> <li>Enact SI that deals with enforcement of the groundwater legislation;</li> <li>Align national constitution with groundwater legislation;</li> <li>Align and synchronise various Acts that deal with water in Zimbabwe;</li> <li>Revise the content of the Catchment Outline Plan to include groundwater issues;</li> <li>Enact legislation to reserve aquifers for development of well fields;</li> </ul>
	<b>Institutional</b>	<ul style="list-style-type: none"> <li>Streamline institutional mandates of key groundwater resource management institutions so that they have complementary goals and objectives;</li> <li>Streamline institutional roles so that there is no duplication in order to avoid conflicts;</li> <li>Improve staffing levels and depth of expertise of key institutions;</li> <li>Ensure collaboration and cooperation among;</li> <li>Establish institution(s) that teach groundwater in order to increase awareness and uptake of hydrogeology as a career;</li> <li>Establish association for groundwater consultants;</li> <li>Establish association for drilling contractors (including drillers and technicians);</li> <li>Expedite the establishment of ZIWASRA;</li> </ul>
	<b>Strategy/ Guidelines</b>	<ul style="list-style-type: none"> <li>Come up with strategy/guideline for information and data collection;</li> <li>Develop SI that sets minimum qualifications for groundwater practitioners for different groundwater management structures;</li> <li>Should come up with procedures for carrying out groundwater development and management activities;</li> <li>Should come up with strategy for training officials including legislators and politicians in order to boost political will to participate in groundwater development and management issues;</li> <li>Enable teaching and learning of groundwater issues at all levels of education;</li> <li>Provide support and incentives to groundwater user groups that engage in groundwater management initiatives;</li> </ul>

Table 10: Action Plan: “Should Haves”

Prioritisation	Element	Description
<b>Should have</b>	<b>Policy</b>	<ul style="list-style-type: none"> <li>Develop policies explicit on groundwater management issues;</li> <li>Develop policy on transboundary groundwater management;</li> <li>Develop policy that strengthens groundwater institutions that deliver groundwater curricula;</li> <li>Develop conjunctive water management policy on groundwater surface water interactions;</li> <li>Develop policy dealing with quality and completeness of data/information submitted and entered into the groundwater database;</li> <li>Introduce scholarships as an incentive for students who want to train and work as hydrogeologists;</li> </ul>
	<b>Legislative</b>	<ul style="list-style-type: none"> <li>Water Act (1998) to be revised/amended to include explicit groundwater management issues;</li> <li>Develop legislation that promotes gender mainstreaming in access, use and management of groundwater;</li> <li>Enact legislation that strengthens and promote conjunctive groundwater and surface water assessment, monitoring and regulation;</li> <li>Enact legislation to deal with establishment of formal localised groundwater user groups;</li> </ul>
	<b>Institutional</b>	<ul style="list-style-type: none"> <li>Introduce student attachment and graduate internship programmes at Zinwa, Catchment and Subcatchment Councils to increase awareness on operations of groundwater management institutions;</li> <li>Training and refresher courses for groundwater practitioners;</li> <li>Promote collaborative work between research institutions, Zinwa / Department of Water and groundwater practitioners;</li> <li>Promote cooperation and collaboration among groundwater users;</li> </ul>
	<b>Strategy/ Guidelines</b>	<ul style="list-style-type: none"> <li>Update the National Water Strategy;</li> <li>Develop and introduce a strategy for water user education on groundwater development, utilisation and management legislation;</li> <li>Develop TV and radio programmes that raise awareness on importance on groundwater development, use and management;</li> <li>Develop a strategy for the review and update or the hydrogeological map of Zimbabwe;</li> </ul>

**Table 11: Action Plan “Could Haves”**

Prioritisation	Element	Description
<b>Could have</b>	<b>Policy</b>	
	<b>Legislative</b>	
	<b>Institutional</b>	<ul style="list-style-type: none"> <li>Graduate trainee programmes at Zinwa, Catchment and Subcatchment Councils;</li> </ul>
	<b>Strategy/ Guidelines</b>	

**Table 12: Action plan “Won’t Haves”**

Prioritisation	Element	Description
<b>Won’t have</b>	<b>Policy</b>	<ul style="list-style-type: none"> <li>▪ The notion that water resources means surface water;</li> </ul>
	<b>Legislative</b>	<ul style="list-style-type: none"> <li>▪ Legislation that regard groundwater as being less important than surface water in the water cycle;</li> </ul>
	<b>Institutional</b>	
	<b>Strategy/ Guidelines</b>	

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**APPENDIX A: LITERATURE INVENTORY LIST**

Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
	Restructuring the Commons: Water reforms in Southern Africa in the context of global water resources management paradigm shifts	Chikozho C.			<a href="https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/170/chikozhoc130502.pdf">https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/170/chikozhoc130502.pdf</a>
<b>2012</b>	Emerging issues on sustainability of community based rural water resources management approach in Zimbabwe: A case study of Gwanda District	Dube T.	International Journal of Development and Sustainability	Vol. 1 no. 3	

Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
2013	Needs assessment to support groundwater management in international basin organisations of Africa, German Federal Ministry for Cooperation and Development	Federal Institute for Geoscience and Natural Resources	German Federal Ministry for Cooperation and Development		
1988	Rural Councils Act 29:13	Government of Zimbabwe	Harare. Government Printers		
1992	Mines and Minerals Act 21:05	Government of Zimbabwe	Harare. Government Printers		
1995	Urban Councils Act 29:15	Government of Zimbabwe	Harare. Government Printers		

Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
1998	Water Act 20:24	Government of Zimbabwe	Harare. Government Printers		
1998	Zimbabwe National Water Authority Act 20:25	Government of Zimbabwe	Harare. Government Printers		
2001	SI 201 of 2006: Water Permits Regulation 2001 CAP 20:24	Government of Zimbabwe	Harare. Government Printers		
2002a	Environmental Management Act 20:27	Government of Zimbabwe	Harare. Government Printers		
2002	Public Health Act 15:09	Government of Zimbabwe	Harare. Government Printers		
2009	National Environmental Policy and Strategies	Government of Zimbabwe	Harare. Ministry of Environment and Natural Resources		

Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
2012	National Water Policy	Government of Zimbabwe	Harare. Government Printers		
2013	SI 90 of 2013 Water Permits Amendment Regulations, 2013 CAP 20:24	Government of Zimbabwe	Harare. Government Printers		
2016	Zimbabwe Climate Policy	Government of Zimbabwe	Harare. Ministry of Environment, Water and Climate		
	Water Sector Reforms in Zimbabwe: The importance of policy and institutional coordination on implementation: <i>Proceedings of</i>	Makurira H. and Mugumo M.			

Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
	<i>the African Regional Workshop on Watershed Management.</i>				
<b>2017</b>	Water Permit Systems, Policy Reforms and Implications for Equity in Zimbabwe: Project Country Report	Makurira H. and Viriri N.			
<b>2004</b>	Water For All: Improving Water Resource Governance in Southern Africa.	Manzungu E.	International Institute for Environment and Development, London	no. 113	



Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
	Groundwater Governance: The Role of Legal Frameworks at the Local and National level – Established Practice and Emerging Trends”,	Mechlem K.			<a href="http://www.mdpi.com/journal/water">www.mdpi.com/journal/water</a>
2011	Water Reforms during the crisis and beyond: Understanding policy and political challenges of reforming the water sector in Zimbabwe	Mtisi S.	Overseas Development Institute	no. 333	

Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
2018	Africa Groundwater Atlas: Hydrogeology of Zimbabwe	Mudimbo D., Owen R., Crane E., Upton K. Ó., Dochartaigh, B., É. and Bellwood-Howard, I.,	British Geological Survey		<a href="http://earthwise.bgs.ac.uk/index.php/Hydrogeology_of_Zimbabwe">http://earthwise.bgs.ac.uk/index.php/Hydrogeology_of_Zimbabwe</a>
2002	Community based natural resource management and community based property rights in Land reform Law: Zimbabwe's Case, IASCP Ninth Biennial Conference, "The commons in an	Murombo T.			

Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
	<i>age of Globalisation"</i>				
<b>2014</b>	Zimbabwe – Strategy for Managing Water Quality and Protecting Water Sources.	Murwira A., Masocha M., Magadza C.,H.,D., Owen R., Nhiwatiwa T., Barson M. and Makurira H	Ministry of Environment, Climate and Water		
<b>2013</b>	Legal framework in the governance of portable water supply in Zimbabwe: A global, regional and national overview of the IWRM paradigm	Musingafi M., C., C.,	Journal of Law, Policy and Globalisation	vol. 11	





Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
2005	Community based management of water supply and sanitation facilities in Zimbabwe	National Action Committee	Government of Zimbabwe		
	Groundwater management in the Southern African Development Community:	Pietersen K. and Beekman H.	SADC Groundwater Management Institute.		
2013	Zimbabwe's New National Water Policy- Responding to Challenges to Create a Foundation for Sustainable Growth.	Zimbabwe Water Forum	World Bank Water	Policy Note 3.0	

Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
	Zimbabwe Joint Needs Assessment	UNICEF		Sector Note 16: Water, Sanitation and Hygiene (Draft)	
	Zimbabwe Report: Water Resource Management Supply and Sanitation.				<a href="https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/9.%20Zimbabwe%20Report_Chapter%207.pdf">https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/9.%20Zimbabwe%20Report_Chapter%207.pdf</a>
<b>2016</b>	Zimbabwe Climate Policy	Government of Zimbabwe	Harare. Government Printers		
<b>2014</b>	Zimbabwe's National Climate Change Response Strategy	Government of Zimbabwe	Harare		



Year	Title of Document	Author	Publisher	Report Number	Link (if it is a website document)
2013	The National Gender Policy (2013-2017)	Government of Zimbabwe	Harare		

## APPENDIX B: STAKEHOLDER ENGAGEMENT LIST

### Stakeholders Engaged

Name	Organisation
Mr. R. Mutepfa	Ministry of Environment: Water and Climate
Eng E. Nhidza	Zimbabwe National Water Authority: Groundwater Unit
Dr. K. Kujinga	Waternet
Mr. H. R. Mashingaidze	Ministry of Environment: Water and Climate
Dr. A. Cronin	UNICEF Zimbabwe
Dr. R Owen	Africa Groundwater Network
Eng. E. Kaseke	Zambezi Strategic Plan: ZAMCOM Secretariat
Mr. U. Mapxashike	Environmental Management Agency
Mr. J. Njanike	Groundwater Development Consultancy
Eng. T. Mavokomatanda	Ministry of Environment: Water and Climate (ZIWASRA)

### Stakeholders that completed the questionnaires

QUESTIONNAIRES		
Name	Designation / Organisation	Sector
Mr. R. Mutepfa	Deputy Director / Ministry of Environment, Water and Climate	Government
Eng. E. Nhidza	Manager / Zimbabwe National Water Authority, Groundwater Unit	Government
Dr. K. Kujinga	Programme Coordinator / Waternet Secretariat	Academia
Mr. H. R. Mashingaidze	National Coordinator / NCU, Ministry of Environment, Water and Climate	Government
Dr. A. Cronin	Chief of Water, Sanitation and Hygiene / UNICEF Zimbabwe	NGO
Dr. R Owen	Network Manager / Africa Groundwater Network	Research
Eng. E. Kaseke	Programme Manager / Zambezi Strategic Plan, ZAMCOM Secretariat	International Organisation
Mr. U. Mapxashike	Environmental Quality Officer, / Environmental Management Agency	Government
Mr. J. Njanike	Director / Groundwater Development Consultancy	Private
Eng. T. Mavokomatanda	Engineer, Ministry of Environment / Water and Climate (ZIWASRA)	Government
Mrs. S. Mapindani	Engineer, Ministry of Environment, Water and Climate	Government

### WASH Sector Borehole Drilling Symposium, 12 July 2018, in Harare

Name	Designation / Organisation	Sector
Dr. K. Kujinga	Programme Coordinator / Waternet Secretariat	Academia

**WASH Sector Borehole Drilling Symposium, 12 July 2018, in Harare**

<b>Dr. A. Cronin</b>	Chief of Water, Sanitation and Hygiene / UNICEF Zimbabwe	NGO
<b>Mr. B. Nzara</b>	Water, Sanitation and Hygiene / UNICEF Zimbabwe	NGO
<b>Dr. R Owen</b>	Network Manager/ Africa Groundwater Network	Research
<b>Mr Zuze</b>	Standard Association of Zimbabwe	Government
<b>Mr. D. Malik</b>	Wash Field Coordinator/ Medecins Sans Frontieres, Zimbabwe Mission	NGO
<b>Eng. Toriro</b>	Director, District Development Fund / Office of President and Cabinet	Government
<b>Mr. Fred</b>	District Development Fund / Office of President and Cabinet	Government
<b>Mr. Machipisa</b>	Director/ Department of Housing and Community Services, City of	Civil Society
<b>Mr. J. Poshiwa</b>	Hydrogeologist / Zimbabwe National Water Authority, Groundwater	Government
<b>Mr. Jaricha</b>	Drilling Superintendent / Zimbabwe National Water Authority,	Government
<b>Mr. L. Chirombo</b>	Health Department / City of Harare	Civil Society
<b>Mr. J. Siwadi</b>	Director-Principal Hydrogeologist / Hydrogeoconsult P/L	Private

**Validation Workshop**

<b>Name</b>	<b>Position</b>	<b>Stakeholder Group</b>
<b>Mr Robert Mutepfa</b>	Deputy Director Water Resources Planning and Development Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement	Government (Validation Workshop)
<b>Mr Eneas Nhidza</b>	Groundwater Manager at Zimbabwe National Water Authority	Government (Validation Workshop)
<b>Mr Wensley Muchineri</b>	Water Resources and Compliance Manager at Upper Manyame SubCatchment Council	Government (Validation Workshop)
<b>Mr Percy Mugwangwavari</b>	Planning Engineer at Ministry of Environment, Water and Climate	Government (Validation Workshop)

## APPENDIX C: DESIRED FUTURE STATE SUMMARY

### Reflection of Policy Framework as per minimum requirement for Desired Future State

Minimum requirement for desired future	Status	Comment
A long-term policy to protect groundwater by preventing pollution and overuse. This policy is comprehensive, implemented at all appropriate levels, consistent with other water management policies and be duly taken into account in other sectorial policies;	Achieved	The policy is there but is not being fully enforced by all key stakeholders. In addition, the policy relates to water resources and is not explicit to groundwater
The social, economic and environmental values of groundwater are all recognised;	Achieved	The value is recognised in relation to water resources in general
The human right to water is recognized and a rights-based approach to groundwater management is taken, <i>inter alia</i> , through:	Achieved	Water is regarded as a basic human right
Prioritization of drinking water/basic human needs in water legislation;	Achieved	Provided for in the legislation as primary water
Ensuring that land-based rights cannot entitle unlimited access/use of freshwater, including groundwater;	Achieved	Provided for in the legislation.
Ensuring groundwater is legally recognized as a public good;	Achieved	Recognised as water resources in general and has an economic value in all its competing uses.
Recognising the role of groundwater in meeting basic human needs for food security;	Partly Achieved	Recognised as water resources in general but not explicit to groundwater
Legal recognition of customary rights to freshwater, including groundwater;	Not achieved	Provided for in the legislation but not explicit to groundwater.
Legal mechanisms to ensure gender equity in access, use and management of freshwater, including groundwater;	Achieved	The policy provides for gender equity in allocation, access and utilisation of water including implementation of water and sanitation activities
Provision of pricing mechanisms that incentivize equitable distribution of rights to access and use of groundwater, as well as prioritization of small-scale users' livelihoods and food security needs, especially youth and women.	Partly Achieved	Provided for in the policy but without food security. However, does not relate directly to gender issues but generally to different interest groups.
Groundwater is recognised as a highly important source of domestic and agricultural water supply and a key resource for poverty alleviation, food security, and the sustainable economic development of rural areas;	Achieved	The policy recognises all water resources as having economic value for poverty alleviation and productive use by the communities.
The biophysical and ecological linkages between ground and surface water for their use, protection and management are recognised, including land use zoning for	Partly achieved	The policy recognises the environment as a legitimate water user. However, it does not mention the surface water groundwater interactions hence no conjunctive use is inferred even in the case of wetlands

Minimum requirement for desired future	Status	Comment
groundwater protection and recharge (conjunctive use);		
The importance of the maintenance of the ecological integrity of wetlands in groundwater management is recognised (recharge zones);	Partly achieved	Wetlands are recognised as important ecological zones, but groundwater management issues are non-existent.
Intersectoral collaboration is promoted and facilitated so that the needs and impacts of different sectors (e.g., land, agriculture, mining, municipal, and environment) are taken into account in groundwater management and the impacts of developments in those sectors on groundwater are accounted for;	Partly achieved	The policy promotes stakeholder involvement, coordination and collaboration mainly in terms of water sector revival, water resources development, disaster risk reduction and water related emergencies.
The need for adaptive management is recognised due to the inherent limitations in the nature of scientific information in conjunction with the widely occurring dynamic processes of climate, social and institutional change;	Partly achieved	Research, information management, water development and climate change issues are included in the policy and there is a proposal to have a National Water Research Fund, to fund the activities. However, these initiatives are not explicit to groundwater and the proposal is yet to take off.
The roles of various stakeholders and water users in groundwater management is recognised and participation of stakeholders in decision-making and groundwater management is promoted and facilitated;	achieved	The policy recognises participation of all stakeholders in water resources management including women.
An apex body that is responsible explicitly for GW management and playing the role of custodian/trustee on the part of the state is clearly defined;	Partly Achieved	Currently Zinwa is the apex body responsible for groundwater management. The policy proposes setting up of a Water and Wastewater Services Regulatory Unit whose full functions will be determined through consultation. This unit is not yet set up hence Zinwa is in charge
Effective institutional arrangements are coordinated at trans boundary, national and local levels;	Partly Achieved	The policy acknowledges the importance and management of shared water basins but does not incorporated groundwater.
Public access to geo-hydrological data held by the state is promoted and facilitated	Partly achieved	The policy provides for a national information management system that is accessible to the public and usable for water management, public information and risk assessments. Currently the system is not fully functional.
Additional environmental principles necessary to protect and sustain groundwater are mandated, including: the precautionary principle, the principle of gender equity and social inclusion (GESI), the principle of subsidiarity, and the principle of intergenerational equity.	Achieved	These principles are covered in the policy. They are for all water resources and not only groundwater management.

## Reflection of Legal Framework as per the minimum requirement for the Desired Future State

Minimum requirement for desired future	Status	Comment
<b>Provide Status of Groundwater</b>		
All water has a consistent status in law, irrespective of where it occurs	Partly Achieved	Yes, but groundwater seems to be lagging behind or overshadowed by surface water in some cases.
Explicit reference to groundwater and conjunctive use management in catchment/water management and development plans and drought/emergency management plans	Not Achieved	Legislation does not refer explicitly to groundwater management in catchment plans
Human right to water recognized in groundwater legislation, facilitating prioritization of drinking water and basic human needs, as well as small-scale users	Achieved	Recognition of water as a human right for primary purposes
<b>Regulate Groundwater Quantity</b> <i>a. Provide conditions for accessing groundwater</i>		
Water use authorizations:	Achieved	The legislation has a water permitting system in place and authority to sink boreholes
Legislation must enable the authorisation of groundwater use (with a system that does not discriminate, especially against the rural poor);	Achieved	The legislation does not discriminate in permitting for groundwater use against rural poor and the development of groundwater in rural areas is done under government and partners funding
The permitting of groundwater use should not be tied exclusively to land tenure;	Achieved	Not tied exclusively to land tenure
Legislation should allow for the categorisation of water users;	Achieved	The legislation categorises both water uses and users (primary and secondary)
Groundwater should be declared a public asset and/or authority vested in government to restrict, in the public interest, the rights accruing from its private ownership to prevent over-abstraction or inequitable access/use by landowners;	Achieved	All water is vested in the State President and is protected against over-abstraction
New legislation should strive towards changing ownership rights to use (usufruct) rights, subject to a government-controlled, permit system for large scale users with appropriate non-permit systems for addressing the needs of small-scale users	Achieved	Water is allocated through a permit system however, for groundwater; an authority to drill and abstract is required except if the water is for primary use.
The legislation recognises and legalises affordable, small-scale and indigenous solutions;	Not Achieved	Not included in the legislation



Minimum requirement for desired future	Status	Comment
The legislation should enable the regulation of borehole drillers, regulation for drilling, control of drillers, information from drillers and standards for borehole drilling;	Achieved	Legislation is in place but is not being enforced
Legislation should give water inspectors the right to enter land with the offenses and associated penalties noted in the legislation (this includes appropriate fines and jail time that needs to be adjusted annually);	Achieved	The legislation enables for the authorised persons entrance in a private premise for inspection. It also provides for fines and/or imprisonment term for non-compliance.
The legislation should enable the regulation of exploration;	Achieved	The regulation of groundwater exploration is covered in the standards
The legislation should allow for zoning for overused/fragile aquifers;	Achieved	The legislation provides for declaration and protects water shortage areas
Groundwater use organizations should be integrated into existing institutional frameworks (e.g., catchment management, customary institutions)	Partly achieved	The legislation does not explicitly cover groundwater user organisations into the institutional framework but refers to water user groups in terms of appointments to Catchment council members
<b>Stakeholder engagement</b>		
The legislation should specify when and how stakeholders, the public and/or other water users are to be engaged in planning, decision making and self-management with regard to groundwater;	Achieved	The legislation does not expressly provide for inclusion of community and water users at catchment management planning. This applies to water resources in general.
There should be specific mechanisms for directly involving stakeholders in the development of laws and regulations related to groundwater and decisions that may impact the use or quality of groundwater on which they depend for drinking, livelihoods, food security, economic or cultural well-being; and	Partially achieved	The legislation does not provide a specific mechanism, but stakeholder involvement is achieved through membership of catchment and sub-catchment councils
The legislation should specifically address the issue of the involvement of women and youth in decision-making and the implementation of groundwater supply schemes.	Not Achieved	No legislation specifically linking groundwater to women and children
<b>Monitoring and data collection to support regulation</b>		
The legislation should specify the need and parameters for a sustainable system for data collection, management and dissemination, including standardization and harmonization of data. This entails a national monitoring and information system which captures quantity and quality data from key aquifers;	Partly Achieved	The legislation is in place but does not specify parameters or the quantity or quality of data collected or standards or protocols in data collection.

Minimum requirement for desired future	Status	Comment
The legislation should specify the need for drought monitoring systems which extend beyond rainfall, surface water and food security indicators to groundwater and groundwater supply status, including the appropriate prediction of future hydrogeological conditions;	Not Achieved	Legislation is void of drought monitoring systems
In transboundary basins, legislation should address the need for standardization and exchange of data as well as the establishment of joint inventories; and	Partly Achieved	Legislation exists only for shared water course systems but does include groundwater explicitly
The legislation should enable access by the public to geohydrological data held by the state.	Achieved	There is a legal provision but does not specify whether it should be for free or paid for.
<b>Water conservation and efficiency of use</b>		
Legislation should enable regulation to ensure the efficient use of groundwater, such as the use of economic incentives and imposition of technologies.	Partly achieved	Legislation on water resources in general is available but does not explicitly talk about groundwater
<b>Compliance and Enforcement</b>		
Clear mechanisms for promoting compliance with groundwater regulations should be included in the legislation	Achieved	Provision is there in the legislation and specific groundwater regulations have been enacted through Statutory Instruments. On the ground, enforcement is the biggest challenge
Enforcement provisions should include, <i>inter alia</i> , inspections authority for groundwater management institutions, the ability to impose fines and/or additional administrative penalties and adjust those as necessary, and enumerate criminal offenses associated with failure to comply with the law.	Achieved	Zinwa has the legal mandate to undertake the inspections and impose fines for non-compliance.
<b>Conflict resolution mechanisms and/or the right to appeal</b>	Achieved	There is provision for conflict resolution and appeals through the Administrative Court or addressed through the Catchment or Sub-catchment Councils
<b>Regulatory measures</b>		
The legislation must enable the relevant authority (Minister) to make regulations on any relevant matter in the legislation	Achieved	The legislation empowers the Minister or delegated authority to develop such regulations
Legislation should provide a clear ability for the government to pass regulatory measures, such as abstraction fees and waste disposal charges, to provide revenue to water management institutions and to incentivise appropriate use of groundwater	Achieved	The Minister is empowered through the relevant department or delegated authority

**Reflection of Strategy and Guidelines Framework as per the minimum requirements for Desired Future State**

Minimum requirement for desired future	Status	Comment
<b>Provide Status of Groundwater</b>		
<b>Groundwater Protection Mechanisms</b>		
<b><i>Regulating Pollution (Point source and non-point source)</i></b>		
i. Water quality targets; ii. Regulation of emissions/wastewater discharge/waste storage including the impact of mines on groundwater quality: Permits can be used to regulate the discharge, disposal and possibly the storage of waste should specifically take into account the vulnerability of the aquifer concerned and the provisions necessary for its protection;	Achieved	The water quality control and environmental protection legislation is in place
iii. Classification of water bodies; and	Achieved	The legislation provides for classification of water resources but is not explicit on groundwater.
iv. Reducing and regulating abstraction.	Achieved	The abstraction is regulated through the water use permits.
v. Powers of compliance monitoring and enforcement	Achieved	Compliance monitoring covered in the legislation, but enforcement remains a big challenge
<b><i>Regulating Depletion</i></b>		
Regulation of abstraction and recharge (usually via permitting);	Achieved	The legislation allows the Minister or delegated authority to regulate abstraction and recharge
Sustaining wetlands;	Achieved	The legislation addresses wetlands conservation specifically through EMA
Land use zoning – prohibition of abstraction in certain zones; cropping or irrigation practices; protection zones for recharge areas; no surfacing/drainage requirements; and	Achieved	This is addressed through the legislation on water shortage areas, reservation of water and water development restricted areas
Legislation must make it mandatory for installation of monitoring equipment of boreholes especially for large-scale users (the	Achieved	The provision is available in Statutory Instrument.

Minimum requirement for desired future	Status	Comment
information must then be supplied to the state).		
Powers of compliance monitoring and enforcement	Achieved	Legislation provides for compliance monitoring, enforcement and fining for non-compliance. However, enforcement is the biggest challenge
<b>Planning</b>		
The legislation should specify the need for long term plans to ensure the sustainable use of groundwater, including drought management plans and cross-sectorial coordination;	Partly Achieved	The legislation provides for water resources catchment outline plans but are not explicit on groundwater and the content speaks more to surface water
Where water legislation provides for catchment level or basin level planning, groundwater should be integrated into those plans (for example through impact assessment requirements);	Partly Achieved	The catchment management planning is not explicit to groundwater.
The legislation should specify that groundwater management planning should take into account and be integrated into land use and environmental planning; and	Partly Achieved	The planning is not tied to land use but more to land pollution
Planning should be cyclical and based on continuous learning from data and stakeholder feedback to ensure adaptive management and effective responses to changing climatic, social, political and institutional contexts/drivers.	Achieved	The legislation specifies that the catchment management plans should be reviewed within 10 years of their publication

**Reflection of Institutional Framework as per the minimum requirement for the Desired Future State**

Minimum requirement for desired future	Status	Comment
Legislation should contain provision for its effective implementation, including the mandate, competence and power of the relevant authorities in accordance with uniform governance principles;	Achieved	The mandate, competence and power of the relevant authorities are clear in the legislation
Water authorities or coordinating bodies should have the competence to integrate all aspects of water management and should be rendered competent to arbitrate among various competing demands, and diverging interests regarding groundwater abstraction and use, both in the short-term and in the long-term;	Partially achieved	The water authorities are constrained mainly by lack of trained staff, budgets, equipment (software and hardware) and political will.
The authority or body should collaborate with other authorities, competent for public health, land-use planning, soils management, waste management;	Partly Achieved	The legislation is not synchronised among stakeholders hence collaboration is lacking
Water user associations and other appropriate forums (such as municipalities) should be utilized to strengthen the user advocacy role and achieve new partnerships and a joint management of the common resource.	Partly Achieved	The Water Users' Associations are mentioned in the legislation but are not fully constituted. They tend to operate as interest groups composed of interested individuals. They need proper reorientation.



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