



NETHERLANDS  
WATER PARTNERSHIP

# **CAPACITY BUILDING FOR ZIMBABWEAN URBAN LOCAL AUTHORITIES IN WATER SUPPLY NEEDS ASSESSMENT AND BUSINESS OPPORTUNITIES REPORT**

**A mission commissioned by**

**Netherlands Enterprise Agency (RVO.nl)**

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<sup>1</sup> "Service Level Benchmarking for Urban Water Supply, Sanitation and Solid Waste Management in Zimbabwe, Peer Review Annual Report" ,December 2014

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## ABBREVIATIONS

AfDB	African Development Bank Group
AMCOW CSO	African Ministers Conference on Water Country Strategy Overview
AWF	African Water Facility
CEO	Chief Executive Officer
DA	District Administrator
EHD	Education and Human Development
EKN	Embassy of the Kingdom of the Netherlands
EMA	Environmental Management Agency
GNU	Government of National Unity
GOZ	Government of Zimbabwe
IFIs	International Financial Institutions
IMF	International Monetary Fund
IWSD	Institute of Water and Sanitation Development
JMP	Joint Monitoring Plan
MEPBF	Macro-Economic Policy and Budgetary Framework
MoE	Ministry of Environment
MoHCW	Ministry of Health and Child Welfare
MDGs	Millennium Development Goals
MTP	Medium Term Plan
MLGRUD	Ministry of Local Government, Rural and Urban Development
MoEWC	Ministry of Environment, Water and Climate
NAC	National Action Committee
NCU	National Coordination Unit
NHST	National Hygiene and Sanitation Taskforce
NWP	Netherlands Water Partnership
PSIP	Public Sector Investment program
RVO	Rijksdienst voor Ondernemend Nederland/ Netherlands Enterprise Agency
RD/UC	Rural District and Urban Councils
STERP	Short Term Emergency Recovery Programme
UWSSR	Urgent Water Supply and Sanitation Rehabilitation Project
USD/\$UD	United States Dollars
WB	World Bank
Zim-Fund	Zimbabwe Multi-Donor Trust Fund
ZINWA	Zimbabwe National Water Authority
ZILGA	Zimbabwe Local Government Association

Table 1: Expressed interest of Dutch water and sanitation sector firms and institutions for 'Identified areas of cooperation between Zimbabwean and Dutch water sectors'

# NEEDS ASSESSMENT AND STUDY VISIT FOR RELEVANT STAKEHOLDERS IN ZIMBABWE'S DRINKING WATER SECTOR

## Executive Summary

A mission was fielded to Zimbabwe (15-27 June 2015) to assess the need for cooperation between the drinking water sectors in Zimbabwe and the Netherlands and to identify the most outstanding areas for project implementation.

The team highly appreciates having been able to meet with the Minister of Environment, Water and Climate (MoEWC), the Permanent Secretary and Director Water Resources Planning and Management as well as the ZINWA Board Chairman. The Water Resources & Infrastructure **Investment Conference 2015** (24-25 June) was also an opportunity to meet many senior staff from the national and local government as well as from the international support agencies. A field visit was made to Harare-Chitungwisa water supply where beneficiaries and staff were met. During the relatively limited time available for the mission of the International Finance Institutions only Worldbank could be met. Additional appointments will be made in the weeks following to the Needs Assessment mission.

On completion of the mission, the Embassy of the Kingdom of the Netherlands (EKN) was briefed on preliminary findings and recommendations.

The Zimbabwean drinking water sector suffers from serious long-term underinvestment. This has created a profound state of neglect at the level of its organizations and infrastructures, which has led to low water supply performance and, in some cases, to a standstill (currently at 25% of the utilities<sup>2</sup>).

The Zimbabwean drinking water sector, specifically the Minister and other top officials in the MoEWC and senior staff and executives in Zimbabwe National Water Authority (ZINWA) expressed a strong appeal to seek cooperation with its Dutch counterpart. The team supports the opinion of the Zimbabwean stakeholders that – with targeted project implementation at ZINWA level as well as at local government/Utility level with involvement of key institutions like MoEWC and ZINWA with the Dutch drinking water sector actors – it is expected that considerable sustainable gains will be made in terms of improving the water supply, and health conditions, in urban areas.

As directed by the mission ToR, the focus was primarily on strengthening the organizational, managerial and technical capacities of the water supply utilities/Local governments as well as on cooperation towards contributing towards establishment of a Regulator. The team takes the position that, in order to support some of these 'soft' objectives effectively, the projects will have to consider some hardware investment as well – for example, to enable utilities to delineate district metered areas with bulk and network water meters in order to facilitate water balancing. Similarly, IT hardware would be required to improve the admin functions related to meter reading, billing and payments, as well as more broadly

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<sup>2</sup> Personal communication with ZINWA Board Chairman

with data management. Government of Zimbabwe policies do allow for privatization and commercialization of the water sector.

This report recommends that further communications be established between the Dutch sector and the authorities that administer the urban water supplies in **Harare-Chitungwisa, Bulawayo and Mutate cities and Kwekwe town**. All of these locations have specific characteristics, which would justify their selection. **Further communication is proposed with ZINWA – and the ministry of Environment, Water and Climate for that matter – to discuss Dutch sector support in view of instituting the Water and Wastewater Regulatory framework as well as Organisational Capacity development.**

It is recommended that projects are identified with the authorities and local governments for joint implementation with the Dutch drinking water sector, as follows:

- Drafting of Water and Wastewater Regulatory framework;
- Organizational restructuring and Capacity development of ZINWA;
- Organizational development at Utilities level;
- Projects funded by the **African Development Bank**;
- Operations management, Tariffs, billing and payment arrangements;
- Upgrading the Unaccounted-for Water menace;
- Planning/Utility Benchmarking and Operational monitoring;
- Procurement (outsourcing and tendering);
- Human Resources Capacity development;
- Supply of water and waste water treatment chemicals as well as a wide range of hardware for the sector rehabilitation and development;

This has been worked out under specific headings in Section 6.

The report proposes that a Zimbabwean delegation visit the Netherlands during the first week of November, in order to further develop planning and to visit the Amsterdam International Water Week (2-6 November 2015), (section 7).

As an added activity, the mission established a contact at University of Zimbabwe for the purpose of creating a platform for the relatively large number of IHE-Delft alumni in Zimbabwe. This will require further follow-up.

Prior to and after the mission, the consultants were in contact with a number of Dutch Water supply companies, **Vitens Evides International, Brabant Water and WaterNet, which expressed their interest to participate. Others said that further information and communication is needed before a position could be taken.**

### **Financing available to rehabilitation and business development of the Zimbabwean water sector**

It is expected that approaches will be made by Government of Zimbabwe (GoZ), through the Ministry of Environment, Water and Climate to various financing and aid agencies e.g. African Development Bank, World Bank, and other donor agencies. Were possible support may be available from EKN, Netherlands Enterprise Agency (RVO)/Netherlands Water Partnership (NWP) and other International Financial Institutions (IFIs). **The African Development Bank is currently the first and only IFI, which has expressed an explicit interest to communicate directly and work with the Dutch water sector actors.**

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The proceedings from the **Water Resources & Infrastructure Investment Conference 2015** (24-25 June, 2015) were IFIs and international businesses attended to may result in initiatives of the GoZ which are relevant to the Dutch sector. It is recommended to communicate intensively with Zimbabwe National Water Authority (ZINWA) on results from the conference and the resulting future planning.

## **1. Introduction to the report**

Several representatives have approached the Embassy in Harare over the last year from the drinking water sector in Zimbabwe. It seems there is an increasing interest to learn from the Netherlands in terms of managing drinking water resources. The government of Zimbabwe is in a process of reorganizing its National Water Authority (ZINWA), which would allow for independent water operators to assume a role in drinking water supply and delivery. The local private sector is interested, but has little experience/expertise to offer. Municipalities are key players as well, but most have a lack of capacity in administering water supply institutions. Several donors are investing in the sector, especially in the big and medium sized cities. Bulawayo, in addition to getting water from surrounding dams, also gets water from boreholes drilled in the Nyamandlovu aquifer some over 50 kms away. Promising discoveries have been made to develop yet another aquifer near Nyamandlovu.

Two water sector experts from Zimbabwe and the Netherlands carried out a Needs Assessment mission from June 11 to 26. The needs assessment identifies the major needs for ZINWA, the Ministry of Water, the water companies and the municipalities when it comes to managing drinking water supply services in Zimbabwe, with a view of what the Netherlands could provide them in terms of knowledge, capacity building and management services. It is expected by EKN that the needs assessment will primarily show “software needs” how to legislate, organize, plan, prepare, tender, manage, train, capacitate etc. The need for new hardware (water infrastructure) is acknowledged for which Dutch companies could be in the market as a result down the line. Even with the existing infrastructure, drinking water supply can be significantly improved.

In line with the ‘Advies plan’ the mission has communicated with the Minister of the Ministry of Environment, Water and Climate concerning identification of decision makers and other influential persons from within the drinking water sector in Zimbabwe who would participate in a study visit to the Dutch water sector.

The report sets out to describe in general the administrative structure and demographic information in the section 2 along with general information about the current status of water and sanitation in the country. Section 3 describes the Water sector institutional, legal and policy framework. In section 4 key issues currently prevailing utility level are briefly worked out leading to a description of human resources Capacity Building and Development section, seen from the Zimbabwean perspective. (section 5)

The prioritized areas for cooperation of the Zimbabwean and Dutch drinking Water sectors are in greater detail described in section 6. Suggestions about the Study visit to the Netherlands, suggested participants; the timing and programming are in section 7 along with proposed steps forward after approval of this mission report.

## Expression of interest of Dutch Water sector firms and institutions towards water sector business development in Zimbabwe

This table enables the Dutch water sector firms and institutions to express their interest to seek business development in one or more of the identified areas of cooperation as listed in the table below. In section 6 of this report more details are available. It should be noted that funding of the business activities should be obtained from a broad fora of international financing institutions (IFIs). The Embassy of the Kingdom of the Netherlands should not be regarded as the principal source of funding of these business activities. It is advised that the Dutch sector will approach and communicate with the IFIs on these matters. An example is a standing invitation for a meeting with Dutch water sector actors extended by the African Development Bank on funding available for the projects mentioned in this report and procurement for implementation.

Interested firms and institutions are requested to indicate their interest with contact information and areas of competence in the below pages and forward this to NWP: **Maaïke Feltmann** [m.feltmann@nwp.nl](mailto:m.feltmann@nwp.nl); **Wim Klaassen** [w.klaassen@nwp.nl](mailto:w.klaassen@nwp.nl) and **Albert Muyambo** [amuyambo54@gmail.com](mailto:amuyambo54@gmail.com);

**Table 1: Expressed interest of Dutch water and sanitation sector firms and institutions for ‘Identified areas of cooperation between Zimbabwean and Dutch water sectors’**

Identified potential areas of cooperation between Zimbabwean and Dutch water sectors	Description in brief	Interested Dutch sector firm/ institution	Mail address	Phone/ Mob.	Contact and Dutch sector expertise offered
Drafting of Water and Waste water Regulatory framework;	The Regulatory framework will be developed for establishment/functioning of the Water/ Waste Water Regulator. It will take into account current and planned organizational reforms in MoEWC and ZINWA;				<b>Contact:</b> ..... <b>Area of expertise:</b> .....
					<b>Contact:</b> ..... <b>Area of expertise:</b> .....
Organizational restructuring and Capacity development of ZINWA;	ZINWA will become a lean organization with clear structure and functions, not duplicating with the private sector or other government organizations. The main goals include: to				<b>Contact:</b> ..... <b>Area of expertise:</b> .....

<b>Identified potential areas of cooperation between Zimbabwean and Dutch water sectors</b>	<b>Description in brief</b>	<b>Interested Dutch sector firm/ institution</b>	<b>Mail address</b>	<b>Phone/ Mob.</b>	<b>Contact and Dutch sector expertise offered</b>
	improve performance; become financially sustainable, meet new legislative requirements in view of the establishment of a regulator and optimise capacity to support the catchment structures/water supply corporations. Capacity development will be extended to improve Governance capacity and processes at Board and Executive/Senior Staff level.				<b>Contact:</b> ..... <b>Area of expertise:</b> .....
<b>Organizational development at Utilities level;</b>	The Zimbabwean water sector included the urban water utilities have become trapped in a cycle of the “three lows”: low investment; low quality of service; and consequently low revenue and/or cost recovery levels. The low levels of revenue relative to costs and declining government subsidies have led to under-investment. The resulting low quality of service makes it difficult to justify raising water rates. This is particularly acute as the water companies did not have the autonomy to set water rates to recover all of their costs over the full lifecycle of the infrastructure. Organisational and policy development will address this vicious cycle.				<b>Contact:</b> ..... <b>Area of expertise:</b> .....
					<b>Contact:</b> ..... <b>Area of expertise:</b> .....
<b>Implementation of projects funded by AfDB</b>	The following projects are currently under preparation: <b>i) African Development Bank/Zim-Fund:</b> Urgent Water Supply and Sanitation				<b>Contact:</b> ..... <b>Area of expertise:</b> .....

Identified potential areas of cooperation between Zimbabwean and Dutch water sectors	Description in brief	Interested Dutch sector firm/ institution	Mail address	Phone/ Mob.	Contact and Dutch sector expertise offered
	<p>Infrastructure Rehabilitation Project Phase 2, Harare, Chitungwiza, Ruwa and Redcliff (\$ 36 million);</p> <p><b>ii) African Development Bank/Zim-Fund:</b> Mutare Construction Water storage Dangamvura and Gimboki treatment works upgrading;</p> <p><b>iii) African Development Bank/African Water Facility:</b> Marondera Integrated Urban Water Management (EUR2 million under preparation).</p> <p><b>iv) AfDB Public Sector funding:</b></p> <ul style="list-style-type: none"> <li>• Kariba Dam Rehabilitation Project (USD75million) – Co-financed with the World Bank (USD75 million), European Investment Bank (USD100 million, Government of Sweden (US25 million);</li> <li>• Bulawayo Water Supply and Sanitation Improvement – USD36 million under preparation. The Bulawayo project involves the replacement of collapsed sewers.</li> </ul>				<p><b>Contact:</b> .....</p> <p><b>Area of expertise:</b> .....</p>
<p><b>Utility level Operations management, benchmarking, monitoring, tariffs, billing and payment arrangements;</b></p>					<p><b>Contact:</b> .....</p> <p><b>Area of expertise:</b> .....</p>

Identified potential areas of cooperation between Zimbabwean and Dutch water sectors	Description in brief	Interested Dutch sector firm/ institution	Mail address	Phone/ Mob.	Contact and Dutch sector expertise offered
Upgrading the Unaccounted-for Water;					<b>Contact:</b> ..... <b>Area of expertise:</b> .....:
					<b>Contact:</b> ..... <b>Area of expertise:</b> .....
Procurement (outsourcing and tendering);	<b>i) Further to related activities carried out</b> - The Zimbabwe Procurement Act has just been revised and is still to be circulated - Training on procurement procedures by the State Procurement Board - ZINWA and some local authorities trained on World Bank Procurement Procedures though the training still needs to be extended to more staff members.				<b>Contact:</b> ..... <b>Area of expertise:</b> .....
					<b>Contact:</b> ..... <b>Area of expertise:</b> .....
Human Resources Capacity development;	<b>i) At all levels in the drinking water sector further training needs to be carried out</b> - Strengthening of Result Based Management;				<b>Contact:</b> ..... <b>Area of expertise:</b> .....

Identified potential areas of cooperation between Zimbabwean and Dutch water sectors	Description in brief	Interested Dutch sector firm/ institution	Mail address	Phone/ Mob.	Contact and Dutch sector expertise offered
	<ul style="list-style-type: none"> <li>- Skills Gap analysis conducted in ZINWA</li> <li>- Introduction of performance management system (IRBM)</li> <li>- Customer service training for ZINWA front offices staff</li> <li>- Team building workshop</li> </ul> <p><b>ii) Result of the Intervention suggested</b></p> <p>The envisaged Results of these trainings and upgrading are:</p> <ul style="list-style-type: none"> <li>- Establishment of a high performance culture;</li> <li>- Improved customer/client relationships;</li> <li>- Improved teamwork, unity and work efficiency;</li> <li>- Improved access to and sharing of information through better records/data management;</li> </ul>				<p><b>Contact:</b> .....</p> <p><b>Area of expertise:</b> .....</p>
Supply of water and waste water treatment chemicals, conveyance hardware as well as laboratory related requirements;	<ol style="list-style-type: none"> <li>1. Supply and/or manufacturing of water treatment chemicals;</li> <li>2. Supply of smart and prepaid water meters;</li> <li>3. Supply of various pipe works and related hardware;</li> </ol>				<p><b>Contact:</b> .....</p> <p><b>Area of expertise:</b> .....</p>
	<ol style="list-style-type: none"> <li>4. Supply of various excavation equipment;</li> <li>5. Water quality assurance, including laboratory equipment;</li> <li>6. Various borehole drilling equipment;</li> <li>7. Hydropower Development.</li> </ol>				<p>Contact: .....</p> <p>Area of expertise: .....</p>

## 2. Administrative geographical areas and demographics

### 2.1. Administrative boundaries

Zimbabwe has a total land area of 386,850 km<sup>2</sup> which is divided into ten administrative provinces. Two of these ten provinces are metropolitan provinces which are the two major cities in the country i.e. Harare (Capital) and Bulawayo (second largest city).

The ten (10) provinces are further divided into 59 districts, with 1,200 wards. The area covered by towns and cities (32 in number) in these districts are managed by Urban Local Authorities while the rest is under the management of Rural District Councils (59 in number). Executives led by the town clerk and non-executive council member who are elected councilors for each ward under the local authority manage Cities and towns. The non-executive councilors (led by the Mayor) constitute the Board of directors to which the executive officials are accountable.

Table 2.1. Provinces, districts and population data<sup>3</sup>

Province	Capital	Districts	Population (2012 Census)
Bulawayo (city)	Bulawayo	Bulawayo	653,337
Harare (city)	Harare	Harare	2,123,132
Manicaland	Mutare	Buhera, Chimanimani, Chipinge, Makoni, Mutare, Mutasa, Nyanga	1,752,698
Mashonaland Central	Bindura	Bindura, Guruve, Mazowe, Mbire, Mukumbura, Muzarabani, Rushinga, Shamva	1,152,520
Mashonaland East	Marondera	Chikomba, Goromonzi, Hwedza, Marondera, Mudzi, Murehwa, Mutoko, Seke, UMP <sup>4</sup>	1,344,955
Mashonaland West	Chinhoyi	Chegutu, Hurungwe, Kadoma, Kariba, Makonde, Zvimba	1,501,656
Masvingo	Masvingo	Bikita, Chiredzi, Chivi, Gutu, Masvingo, Mwenezi, Zaka	1,485,090
Matabeleland North	Lupane	Binga, Bubi, Hwange, Lupane, Nkayi, Tsholotsho, Umguza	749,017
Matabeleland South	Gwanda		683,893
Midlands	Gweru		1,614,941

<sup>3</sup> Source:[2012 Census]

<sup>4</sup> Uzumba-Maramba-Mfungwe

Beitbridge, Bulilimamangwe<sup>5</sup> Gwanda,  
Insiza, Matobo, Umzingwane  
Chirumhanzu, Gokwe North, Gokwe South,  
Gweru, Kwekwe, Mberengwa,  
Shurugwi, Zvishavane

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<sup>5</sup> In process of splitting into Bulilima and Mangwe

Figure 0. Map of Zimbabwe<sup>6</sup>



## 2.2. Demographics

According to the 2012 census, the total population of the country was 13,061,239 of which 33 percent live in urban areas. An urban area is defined as (i) a designated urban area (Municipality, Town Council, or Local Board), or (ii) a place with more than 2,500 inhabitants, a compact settlement pattern, and more than 50 percent of employed persons engaged in non-agricultural activities. The 2012 census reports the average population growth rate as 1.1 percent.

## 2.3. Basic Water and Sanitation data

The 2012 national census reports the following statistics<sup>7</sup>

- There are 3,059,016 private households with an average size of household of 4.2 persons.
- 59 percent of households live in their own dwelling unit (of which 51 percent live in a traditional dwelling, and 44 percent live in a modern dwelling).
- 18 percent of households in Zimbabwe have piped water inside their dwelling units.
- 15 percent have piped water outside their dwelling units
- 38 percent fetch water from boreholes and protected wells.
- 4 percent use communal taps
- 21 percent use unprotected wells and rivers, streams and dams.
- 25 percent do not have access to safe water for drinking and cooking (i.e., either piped or from boreholes or protected wells).

<sup>6</sup> www.mapsofworld.com

<sup>7</sup>It was noted from discussions in the sector that some of the WASH data in the census is disputed. Final report Capacity building for Zimbabwean local urban authorities in water supply needs assessment and business opportunities report, July 2015

- About 33 percent of households in Zimbabwe use a flush toilet, 22 percent use blair toilets, 13 percent use a pit latrine, and 4 percent use communal toilets. 24 percent do not use any type of toilet facility.

**Table 2.2: Percentage of households with access to safe water and toilets<sup>8</sup>**

Province	Water	Toilet
Bulawayo (city)	96	99
Manicaland	74	80
Mashonaland Central	69	79
Mashonaland East	72	77
Mashonaland West	64	72
Matabeleland North	71	44
Matabeleland South	67	63
Midlands	67	63
Masvingo	64	57
Harare (city)	94	100

The Zimbabwe Multiple Indicator Cluster Survey 2014 indicates that:

- In urban areas, 76.4 percent of the population had access to improved drinking water sources on their premises as compared to 14.6 percent in rural areas.
- Harare and Bulawayo have 97.2 and 98.9 percent of the population with access to an improved source of drinking water respectively.
- The use of piped water was at 29% in Harare that has 68.7% of the population relying on boreholes, protected wells and bottled water. However, the use of piped water was increasing due to the improvement in water supply as a result of the rehabilitation of the major waterworks in Harare.

The above figures were picked from the 2012 census and WASH. These figures do not portray the real situation.

For instance, an average of 4.2 persons per household is suggested although in real life the number per household is larger than this. Harare and Bulawayo and other towns do have reticulation but water is seriously rationed. In Harare only most well to do people have drilled their own boreholes for self-supply.

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<sup>8</sup>Source: 2012 Census

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### 3. Water sector framework in Zimbabwe

#### 3.1 Institutional Framework

Urban Local Authorities are mandated, by the Urban Councils Act (Chapter 29:15), to provide water and sanitation services to areas under their jurisdiction. The Zimbabwe National Water Authority (ZINWA) is responsible for bulk water supply to Urban Local Authorities, industries, mines and for agriculture. ZINWA supplies water and sanitation services in some areas, on behalf of the local authorities that do not have capacity to do so. Under the ZINWA Act, the Authority is also mandated to provide technical assistance to local authorities in the planning, development and management relating to water.

Local Authorities report to the Ministry of Local Government, Public Works and National Housing while ZINWA is a parastatal under the Ministry of Environment, Water and Climate. The respective Ministries approve tariffs for ZINWA and Local Authorities. ZINWA also carries out other functions besides provision of water and sanitation services and these include water resources planning, national water infrastructure development and integrated water resources management on behalf of the State.

Regulation of the water sector is currently split between several institutions which include the Ministries of Environment, Water and Climate; Health and Child Care and Ministry of Local Government, National Housing and Public Works, ZINWA and the Environmental Management Agency (EMA). ZINWA is both a service provider and a regulator and the National Water Policy of 2013 gave way for the formation of an independent regulator to address, among other things, the self-regulation of ZINWA. Government has now approved the formation of a Water and Waste Water Services Regulatory Authority, WWSRA to address the fragmentation of the responsibility for regulatory functions. The process to formulate the WWSRA and institutionally re-align ZINWA and EMA accordingly has commenced.

#### 3.2 Policy and Legal Framework

Zimbabwe's economic blueprint, The Zimbabwe Agenda for Sustainable Socio – Economic Transformation (ZIMASSET) recognises water as a pillar for development. ZIMASSET also encourages the active participation of the private sector and donors in national projects. The blueprint has set targets on rehabilitation of existing water supply infrastructure and on the development of new infrastructure. Significant strides are being made in the rehabilitation of water supply infrastructure with support from development partners. The Government is also allocating resources to new infrastructure projects, some of which are almost complete. The participation of the private sector and donor agencies is necessary to accelerate the implementation of new projects as envisaged by the ZimASSET.

It is noted by the consultants that Government used to fund infrastructure through the Public Sector Investment Programme (PSIP). PSIP funds are fast dwindling. Therefore government is now encouraging PPPs, BOT, BOOT, JVs, loans and other financial proposals to fund projects.

**The Zimbabwe Program for Economic and Social Transformation (ZIMPREST) 1996-2000** put in place a framework to link economic policy to sustainable development, including commercializing some government services to meet the dual objectives of institutional and financial sustainability through improved commercial management and customer focus, and addressing development and poverty reduction. This led to the creation of ZINWA out of the amalgamation of the former Department of Water Development and the former Regional Water Authority.

**The Water Act (1998)** established seven Catchment Councils (representing water users in a river system), and ZINWA's responsibility for water resources planning, development and management, and provision of bulk water. ZINWA and the Catchment Councils are responsible for preparation of Outline Plans to consult with authorities and bodies concerned with development and utilization of water resources, draw up an inventory of resources of the catchment, and indicate priorities for the use of water, the allocation of water between different sectors, permissible levels of pollution, and phasing of development. The Water Act also sets out the provisions for use of water for primary purposes through construction of water storage works and boreholes. The Catchment Manager is advised by the Catchment Councils, and is an employee of ZINWA.

The Water Act also established the Water Fund as a common pool of funds that the Minister of Water could use in areas of greatest need, with Local Authorities and ZINWA eligible for funds. However, inflows to the fund have been minimal.

**The ZINWA Act (1998)** sets ZINWA's responsibility for provision of potable water to about 500 stations; essentially local authorities and government institutions that are not able to provide their own services. ZINWA currently manages water supply for over 500 stations spread across seven catchments. Many of these serve smaller, poorer towns where capacity of local authorities is weak. Out of these, about 15 percent are able to breakeven. Nevertheless, ZINWA's survival and growth strategy now relies heavily on its revenues from potable water supply since the uptake of raw water for irrigation remains depressed.

**The Urban Councils Act** and **Rural District Councils Act** set out the provisions concerning the establishment of municipalities, towns and districts, and their control and administration by local boards, Town Councils, Municipal Councils, City Councils and Rural District Councils, including employment of staff, appointment of standing committees and special committees, responsibilities for sewerage, drainage, and water (such as rationing of supply, fixing tariffs, pollution control, and sinking of boreholes), and financial provisions.

The Act confers powers of municipal and town councils in regard to sewerage and drainage as well as in relation to water supply and to preparing estimates in relation to these functions as well as preparing separate income and expenditure accounts as may be necessary, ... "or if the Minister so directs, balance sheets that reflect a true and fair view of (iii) the water account". However, there is no specific directive in the Act for councils to open a separate Water Account, as is required for Housing Account, Capital Development Fund or Estates Account.

**The National Water Policy** highlights Zimbabwe's strong tradition in water resources development and water supply and sanitation; and the deterioration of assets as revenues from irrigation collapsed from the 1990s onwards, such that ZINWA has come to rely on its revenues from potable water supply. In recent years, there have been serious outbreaks of cholera and typhoid and other waterborne diseases. During 2008 to 2009, Zimbabwe suffered a serious cholera outbreak with over 90,000 cases affecting 60 out of 62 districts and about 4,300 deaths, and this has been linked to poor water and sanitation services

The policy sets out a process of phased recovery to address infrastructure, institutional and legal frameworks, human resources and institutional capacity, and financial viability of institutions. The

phasing makes provision for gradual improvement in service standards and cost recovery. In the interim period, Government and Development Partners would subsidize repair, rehabilitation and expansion of infrastructure; but in the long term, Urban Councils would be fully self-financing, and Rural District Councils would be partially self-financing.

The National Water Policy seeks to separate policy and regulation, development and service provision functions. This is to be achieved by:

Making a distinction between Water Service Authorities (Urban Councils and Rural District Councils), responsible for services, and Water Service Providers contracted to provide services.

Separating ZINWA's potable water supply function (under a proposed National Water Supply Services Utility, NWSSU), and its water resources management function (its main function working with Catchment Councils as set out in the Water Act).

Establishing a Water and Wastewater Services Regulatory Unit to monitor service delivery, assess tariff applications, and oversee licenses between Water Service Authorities and Water Service Providers; and an independent regulator of dam safety.

Significant events to have impacted ZINWA include: In 2005, government directed ZINWA to take over the supply of bulk clear water for the city of Harare and later in that year government further directed ZINWA to supply, distribute and bill water for Harare. In the year 2006 government then mandated ZINWA to supply, distribute and bill clear water to all cities and towns in Zimbabwe. In February 2009, government reversed all the decisions made from 2005. Under the direction of the Government, in 2005 ZINWA took over the water and sewerage infrastructure from urban local authorities that were facing financial difficulties. Then, in 2009, handed them back again. This resulted in a loss of revenue streams built up during that period, and a burden of operating creditors. The formation of the Environmental Management Agency (EMA) in 2008 required that ZINWA hand over the national water laboratory and administration of wastewater discharge permits.

## 4. Summary of Key Issues in Urban Water Supplies

The World Bank is currently supporting the Government of Zimbabwe in Service Level Benchmarking of water and sanitation services in all the urban local authorities. The categorization of the urban local authorities is shown below.

**Table 3.1 Local authorities in Zimbabwe**

<i>Cities</i>	<i>Municipalities</i>	<i>Town Councils</i>	<i>Local Boards</i>
Bulawayo	Bindura	Beitbridge	Epworth
Gweru	Chegutu	Chipinge	Hwange
Harare	Chinhoyi	Chiredzi	Lupane
Kadoma	Chitungwiza	Gokwe	Chirundu
Kwekwe	Gwanda	Karoi	Ruwa
Masvingo	Kariba	Mvurwi	
Mutare	Marondera	Norton	
	Redcliff	Plumtree	
	Victoria Falls	Rusape	
		Shurugwi	
		Zvishavane	

Most of the issues highlighted under this section highlights the findings of the service level reviews (peer) undertaken in 2014 to review service levels for the year 2013. A benchmark exercise had been done for these urban local authorities in 2012.

### 4.1. Low capacity utilization

The capacity utilization of water supply assets declined from the original design capacities due to obsolete pumping equipment which has not been replaced and lack of rehabilitation and maintenance of water treatment facilities. Standby pumps are missing at most waterworks except for those rehabilitated with donor support in the recent years. These include Karoi, Masvingo, Gwanda and Beitbridge.

### 4.2. High non-revenue water (NRW)

Chitungwiza and Epworth get water from Harare. Chitungwiza, though, shares capacity of treatment and supply from one water supply plant called Prince Edward Waterworks, which is located at the entrance to Chitungwiza. Both high-density areas get water supplies from Harare and have no independent treatment plants of their own. Most master and consumer meters in the urban local authorities are not working and the data used for calculating NRW is based on estimates, which are not expected to be accurate. Some Councils used estimates which were generally on the higher side, especially in Chitungwiza, Epworth and Shurugwi. Some councils also had suspiciously very low NRW, which could be due to high estimates of water consumed. The estimates are based on pumping records which are however not reliable since efficiencies of pumps diminish with age, especially in the absence of adequate maintenance as is the case in most urban local authorities. Production estimates of consumptions are usually based on previous consumption history. The meters that are taken as functional have not been calibrated and their accuracy is doubtful with some of them have served for several years. There have been reports of meters moving very slowly or too fast therefore distorting the

consumption figures and affecting the billing process. Most Councils report that at least 50% of the consumer meters are not functional.

#### 4.3. Continuity of water supply

Water is generally available for half the day in most Councils. Very few Councils such as Kwekwe, Kariba, Rusape and Victoria Falls were able to supply water for over 20 hours per day (see Fig 3.2 below). The situation was most critical in Chitungwiza, Epworth and Norton. Record-keeping on the supply situation for different areas in councils remains very poor. **Most, if not all urban local authorities need to develop a systematic way of recording, analyzing, reporting and archiving data pertaining to water supply. In some cases, records are recorded manually and only kept as hard copy.**

The consultants do have some statistics in the daily supply of water (2013) for all 32 urban councils in Zimbabwe. However, as there were some overarching doubts about the reliability of the data it was preferred not to include these in the report.

#### 4.4. Planning, benchmarking and operational monitoring

Inadequate or outdated ICT features some Councils as they are using old computers and have not been able to renew licenses for their software. Most Councils use the Proman Billing Software while Bulawayo and Harare City Councils use BIQ. These are however used only partially, as some modules in these soft wares are not being utilized due to inadequate training and limited use of ICT systems for management. These modules include the ones for Procurement, HR and asset (vehicle fleet) management. A number of towns and utilities are also operating without current master plans or strategic plans.

#### 4.5. Efficiency in satisfactory response/reaction to customer complaints,

The ability of councils to adequately respond to complaints remained constrained by limited resources. In most cases, save for Bulawayo and Harare, there are no call centers or other mechanisms for customers. It was said in discussions that even if there are call centers these do most often not effectively respond to customers.

#### 4.6. Quality of water supplied

Except for large cities, most towns do not have the requisite equipment for testing on their own. Where tests are done, these tend to be restricted to basic tests such as residual chlorine, pH and turbidity and these were confined to water treatment plants. **Tests are rarely done, or not at all, for intermediate points whilst there is no standard regime for tests at consumer end. Councils' utilities therefore need to come up with an appropriate sampling, testing and quality control protocol in order to improve the protection of their water consumers.** Overall it can be sad that that the quality of the water supplied is most often critically below standard, either it be national standards as well as international/regional standards. Councils/utilities should periodically send samples for independent verification. For instance the government Analyst laboratories can do this for free although results might take long to come back.

#### 4.7. Operating cost recovery in water supply services

Average operating revenues continued to go down by about 28% between 2012 and 2013, probably due to debt cancellation and councils accounted for this decline in different ways. The net response to reduced operating revenues was for councils to reduce expenditure on water supply by nearly 23%. **About 25% of the councils are not achieving full cost recovery whilst those councils achieving more than 200% cost recovery (about 25% of them) could be under-spending on water supply.** Despite

operating costs are at the basis of what Councils actually incur Councils are not carrying out adequate maintenance of the water supply infrastructure. The consultants do have some data regarding operating cost recovery but are in doubt on the reliability of the figures and hence reluctant to quote this figures to underpin the content of the report. Some comments could be made, for instance Masvingo and Mutare show high recovery of operating costs because the water supply plant and equipment was recently rehabilitated. Only 4% was used for maintenance related expenses out all the expenses incurred in urban water supplies in 2013. This is very low compared to the target benchmark of 20%. **It has been recommended that councils keep separate ledgers for maintenance as compared to repairs.** This is generally not done. In addition, a costed maintenance plan is required for each council. **Currently maintenance is most often reactive and there is need for Preventative Maintenance approaches including budgeting, with computerized monitoring of pumping equipment and supply functions including water quality monitoring.**

A tariff study conducted by ECA in 2011<sup>9</sup> in seven municipalities (Harare, Chitungwiza, Mutare, Masvingo, Chegutu, Kwekwe and Bulawayo) concluded that in 2 of the municipalities, combined water and sewerage tariffs can be lowered slightly and in the other cases, increases of between 13% and 75% are required to meet operating cost.

#### **4.8. Efficiency in collection of water supply-related charges**

The revenue collection efficiency decreased from 52% in 2012 to 41% in 2013. This is at the backdrop of a general tight liquidity situation prevailing in the country, compounded by attitudes towards paying bills created by the debt cancellation by Government in 2013. However, it was noted that the results are hamstrung by problems in interpreting current revenues. Some Councils, as indicated in Fig 3.4, accounted for what they collected as payment against arrears. There is need to come out with a uniform interpretation on this.

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<sup>9</sup> "Zimbabwe Urban Water Study", 2011

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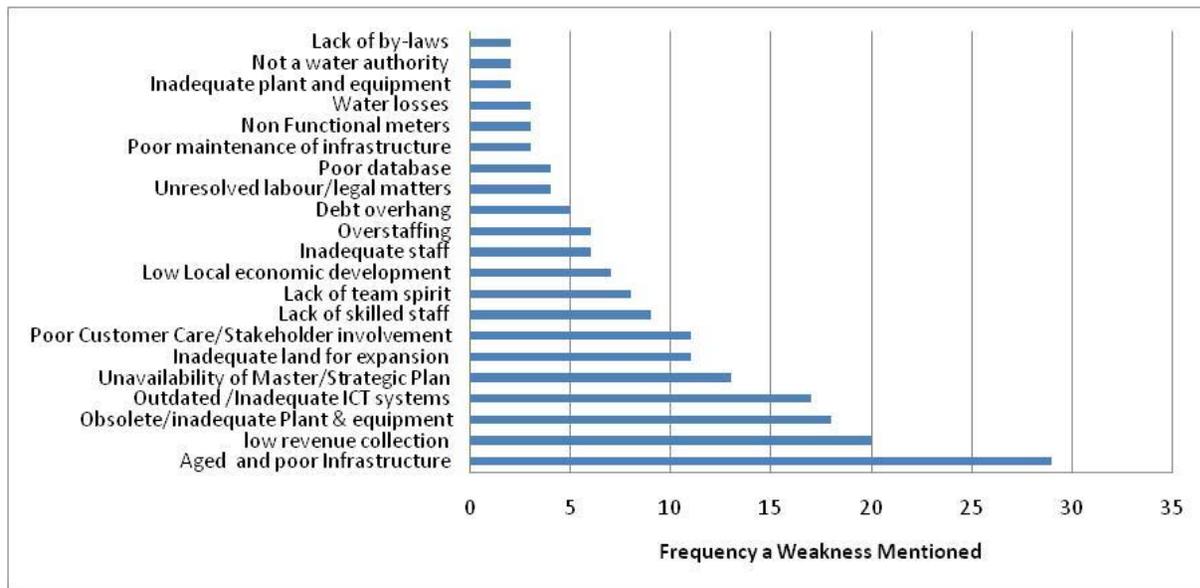
## 5. Capacity Building and Development

### 5.1. Human Resources Capacity Development

Capacity building is concerned with human resource development (people), institutional development (local government system) and the overall policy environment within which the local Authorities operates and interact. In section 6 options for organizational development and human resources development in the 4 selected urban water supplies and within ZINWA and the national water sector legal system has briefly been worked out.

This section does reflect on human resources development in the context of the weaknesses; strengths and opportunities identified during the review of water supply services levels for urban local authorities for 2013<sup>10</sup>. In summary from below graph, the most outstanding weaknesses in the soft sector include:

- i) revenue collection, including meter reading and billing;
- ii) IT hardware and related skills, incl. poor data management;
- iii) planning capacity;
- iv) customer care and relations, stakeholder management;
- v) at staff level: inadequate skills and team spirit



**Figure 4.1 Weaknesses affecting most Local Authorities**

The survey indicated that opportunities are identified at local government level include the formation of PPPs, capacity development at local government level including utilities and also knowledge management. Related Threats and Challenges from the SWOT exercise are in annex 6.

<sup>10</sup> "Service Level Benchmarking for Urban Water Supply, Sanitation and Solid Waste Management in Zimbabwe, Peer Review Annual Report", Worldbank, December 2014  
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## 5.2. Human Resources Development

At utility level it is recommended to conduct a skills and knowledge gap analysis. The process should assess the current skills available and analyze whether there are adequate skills to drive the strategy. Human Resource Development is key component to the success of any turn around.

### Strategic and Operational Planning

There is need to assess if there is a Strategic Plan in place. Analyses the key strategic thrust and highlight the key focus areas. There is need to make sure that strategic plans for urban local authorities address the identified key focus areas and adopt best practices in all areas of operation.

## 5.3. Skills Audit

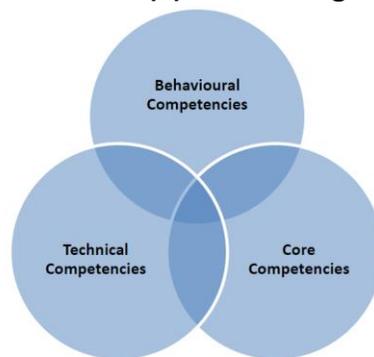
In order to ascertain the required skills, there is need to assess the current skills base. The skills audit should assess the following:-

- ✓ Assess the adequacy of the organizational structure (including staffing levels);
- ✓ Analyse nor evaluate the adequacy of Job Descriptions; and
- ✓ Identify the skills gaps

The approach to the Skills Audit is to look at skills in the context of the broader definition of Competencies. Our considered opinion is that limiting the analysis to skills alone would result in limiting the scope to technical competence. Our premise is that, normally, technical competence is not contestable in an environment where technical skill underlies the business of the organization.

The competitive edge of organizations in a rapidly evolving and changing environment lies in the ability of its people to adapt to the pace of change and their ability to take the organization forward in meeting its strategic objectives. Hence the requirement to succeed goes beyond merely having the appropriate technical skills; it calls for an ability to make sense of and function effectively in an increasingly diverse, complex and interconnected world of work. Technological advancements place unparalleled pressure on both the leaders and employees of organizations in terms of engaging and internalizing massive quantities of information. They also face the challenge of finding the correct balance between economic growth and sustainability, and prosperity against social responsibility. These “new” competencies that assure relative success are broader than narrowly defined skills and knowledge, and allow for more mobility, flexibility and transferability across a wide range of sectors, industries and functional areas.

**Key competencies can be framed in three (3) broad categories:**



*Figure 4.6 – Competency categories*

All three categories of competencies, in the right mix and at the appropriate levels, are crucial for the effective performance of any organization; hence, it is necessary to assess the adequacy of these at various levels of the organization.

#### **5.4. Behavioural or General Competencies**

As defined by the Human Resources System Group, these “...describe the observable behaviours that successful employees in a wide range of occupations demonstrate on the job. They are required for virtually every type of job – administrative, managerial, leadership and technical or specialised”.

These competencies reflect the desired attributes across all occupational levels and roles.

#### **5.5. Technical or Functional Competencies**

Technical or Functional competencies are particular skills and knowledge specifically related to the job. They provide for different levels of complexity described in accordance with occupational levels; for example Engineering, Finance and Accounting, Human Resources, inter alia.

#### **5.6. Core Competencies**

As defined by Wikipedia, these “...differentiate an organization from its competition and create a company’s competitive advantage in the marketplace. An organization’s core competency is its strategic strength”.

Our methodology in establishing the skills gap for the individuals identified shall be a combination of questionnaires and face-to-face interviews. The templates applied shall be:

- ✓ The Individual Training Needs Analysis and Skills Audit Questionnaire
- ✓ Skills and Knowledge Assessment: Self –and Manager-Assessment

Establishing the individual competencies of those incumbents in the various job roles enables the organization to identify and link its own goals to those of key individuals, thus strengthening the collective goal or “guiding coalition”. The sum of individual competencies affects the ability of the organization to achieve the shared goals.

## 6. Prioritized areas of cooperation of the Zimbabwean and Dutch drinking water actors

After the consultations the team has identified a number of priority areas and potential projects where the Dutch and Zimbabwean organizations would be most suitable but also urgent to cooperate. These are listed below whereby each of the priorities is briefly described.

The consultants wish to note as a general comment that technical capacities in the utilities as well as within ZINWA meet considerable standards. Although capacity development at the level of operators and technicians the profound underfunding of the sector by government as well as political decisions taken prior to the elections of 2004 turned out to be highly damaging for governance and sustainability of the sector. An outstanding example is that government canceled all arrears of those who were in debts with the water supply companies or with ZINWA for that matter. Another example is that from several discussions with directors of utilities and senior staff in ZINWA that private family users of water as well as companies fulfill their financial obligations and pay for the water billed. Consistently however, various governmental institutions omitted consistently to pay for the charges. Officials from the utilities noted that they, most often, are not in the position to remind these defaulting institutions to pay their bills. This practice will have to be addressed in view of GoZ's decision to commercialize the water sector.

The consultants propose that the overall focus for capacity development of the sector would be in the area of organizational effectiveness. This includes the administrative organization, its management as well as availability of administrative and organizational tools with application of new systems and procedures. This goes hand in hand with introduction of IT and training of optimal applications. The consultants have emphatically taken into account the direction in the ToR that the recommendations will specifically focus on software development were upgrading of hardware was felt to be conditional for meeting the result of software upgrading has been identified and recommend.

In the below sections the recommended focal areas for cooperation have been worked out in brief. For each proposed action the intended **i) Result, ii) Activities already carried out, iii) required Competence** of the Dutch agency, **iv) Indispensable local Stakeholders** and **v) Success/Failure factors** are in the below framework of assessment.

### 6.1. Areas of proposed involvement of the Dutch organizations

*The mission does propose to implement projects related to*

- i) Drafting of Water and Waste Water Regulatory framework,*
- ii) Organizational capacity development of ZINWA and the identified Utilities/local government and hands-on with operation in the following urban supplies,*
- iii) Chitungwiza town, currently part of Harare supply infrastructure,*
- iv) Bulawayo city,*
- v) Kwekwe town,*
- vi) Mutare city.*
- vii) Implementation of projects funded by the **African Development Bank**;*
- viii) Opportunities for Dutch companies in supplies and procurement;*

## **6.2. Focal area: Water and Waste Water Legislation**

### **6.2.1. Drafting of Water and Waste Water Regulatory framework**

#### **i) Results of the proposed cooperation**

The Regulatory framework will be developed for establishment and functioning of the Water/Waste Water Regulator. The framework will take into account the current and planned organizational reforms which may be carried out on the short term in the organizational units in MoEWC and ZINWA;

#### **ii) Activities already carried out (past 2 years)**

- National Water Policy was developed in 2013 and it highlighted the need for the formation of an independent regulator for water and wastewater services. Local Authorities are to be Services authorities with power to appoint any utility to supply water and waste water services. The appointed utility could be ZINWA, a company under the local authority or any private company. ZINWA needs therefore to be restructured after the removal of regulatory and statutory functions that it is currently carrying out. It has to be structured in a way that makes it viable and be able to compete with other utilities.
- A Consultant from South Africa carried out an analysis of the current institutional setup of ZINWA in late 2014 and came up with the suggested institutional reforms needed to achieve the objective of the National Water Policy. The legislation governing the water sector needs to be amended to enhance the operation of Local Authorities, ZINWA, EMA and other institutions as per the water policy.
- The MoEWC and ZINWA developed Visions and Missions that are IRBM compliant and indicate the desire to develop a water sector that is sustainable.
- In 2015, the Cabinet approved the formation of the Water and Wastewater Regulatory Authority (WWSRA) and the restructuring of ZINWA. Currently, the government established inter – ministerial committee to carry out the groundwork of the formation of the WWSRA. The regulatory functions are currently split between ZINWA, EMA, Ministry of Health and Child Care and the Ministry of Local Government, Public Works and National Housing.

#### **iii) Competence required of the Dutch company/organisation**

- Experience with legislation processes, including legal drafting related to establishment of regulatory institutions and its functions in the Netherlands and international context;
- Avail medium term TA (1 years) available based within ZINWA/MoEWC;
- Ability to work in a result oriented way in a participatory way with multiple stakeholders in a possibly politicized environment;

#### **iv) Local stakeholder(s) to be involved**

- Ministry of Environment – lead Ministry in the formation of WWSRA and the restructuring of ZINWA
- Ministry of Justice – responsible for drafting and drawing up of new and amendment of Bills
- ZINWA – the de factor regulator and water authority which is to be restructured
- Environmental Management Agency – currently carrying out some regulatory functions (especially on waste water discharge)
- Ministry of Health and Child Care – The Ministry currently monitoring regulatory functions on drinking water supplied by Local Authorities
- Ministry of Local Government, Public Works and National Housing – ministry responsible for all local authorities in the country

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- Local Authorities – currently responsible for supplying water and sanitation services in areas under their jurisdiction.
- Ministry of Agriculture, Mechanisation and Irrigation Development – the ministry responsible for the sector that has the highest water consumption in the country and is partnering with MoEWC in the development of the proposed National Water and Irrigation Master Plan
- Catchment Councils – are currently responsible for issuing permit for storage and abstraction of water from public streams and groundwater sources
- Ministry of Finance – responsible for funding of government activities and projects
- Civil Protection Unit – recipient of information on river flows for flood monitoring purposes from ZINWA
- Development Partners – supported some work on the policy and institutional reforms in Zimbabwe (World Bank, African Development Bank, and donor agencies)
- Ministry of Gender and Women Affairs
- State Enterprise Restructuring Agency

**v) Factors determining Success and Failure**

Success factors include:

- The formulation process does have full support from key political and ministerial actors;
- There is a clear understanding of all water sector related Bills and Acts in Zimbabwe;
- Water sector Bills, Acts and Policies are in harmony and complementary and support establishment of the regulator
- There is a clear understanding of the interdependence of the current and proposed new and reformed institutions and how their work currently affect each other in the current and future setups

### **6.3. Focal area: Organizational restructuring and management**

#### **6.3.1. Organizational restructuring and capacity development of ZINWA**

**i) Result of the proposed cooperation**

ZINWA will become a lean organization with clear structure and functions which do not duplicate with the private sector or other government organizations. The main goals of the restructuring are: to improving performance; become financially sustainable, meeting new legislative requirements in view of the establishment of a regulator and optimise its capacity to support the catchment structures, including the water supply corporations. Support will be extended to improve Governance capacity and processes at Board and Senior Staff level. This would include the following good governance principals in water supply and sanitation as follows: protection of public health and safety; environmental protection; accountability for stewardship and performance; transparency and respect for the rule of law; user participation; balancing equity; efficiency and effectiveness in performance.

**ii) Activities already carried out (past 2 years)**

Between 2013 and 2014 ZINWA carried out the following:

- Job Evaluation/Grading
- Skills Audit for ZINWA
- Skills Gap Analysis
- Performance Management Training – IRBM, facilitated by Government

As a result of the above initiatives, ZINWA implemented a rationalisation process resulting in a leaner organisation which reduced staff from 2500 to 1800.

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**iii) Competence required of the Dutch company/organization**

- Experienced with organizational reform in the water supply/natural resources sector at national level;
- Conduct organizational change processes without disturbing conduct of the day-to-day tasks of the staff;
- Conduct training at all levels on new skills, roles and responsibilities;

**iv) Local stakeholder(s) to be involved**

- Ministry of Environment, Water and Climate, Ministry of Justice, Environmental Management Agency, Min. of Local Gov. others;

**v) Factors determining Success**

Success factors:

- The process will have adequate political and financial support from GoZ;
- Capacity development and training will be performance based and performance monitored;
- Staff will have a sense of belonging therefore will be more focused.

**6.3.2. Organizational development at Utilities level**

The Zimbabwean water sector included the urban water utilities have become trapped in a cycle of the “three lows”: low investment; low quality of service; and consequently low revenue and/or cost recovery levels. The low levels of revenue relative to costs and declining government subsidies have led to under-investment. The resulting low quality of service makes it difficult to justify raising water rates. This is particularly acute as the water companies did not have the autonomy to set water rates to recover all of their costs over the full lifecycle of the infrastructure.

This is exacerbated by the position taken by the government of proclaiming cancelation of arrears of payment of water charges (2012) leading to financial crises at utility level, inability to provide for long-term capital expenditure for infrastructure renewals, rehabilitation and replacement. In addition, most often, as was explained by utility and catchment management, the utilities are unable to cater for the short-term operations and maintenance of the water supply system.

In the years 2013 and 2014 government introduced Results Based Management (RBM). Government for parastatals held training workshops and government enterprises from which each organization ended up with a revised or new Strategic Plan aligned to ZimASSET. It will be necessary to access if organizations identified at this stage have got strategic plans. It will be necessary then to observe the strategic thrust and highlight key focus areas.

The above-described conditions prevail for all supplies in Zimbabwe. In order however to obtain full, insight in the specific local conditions of the individual water supply companies a detailed analysis will have to be carried out. Such assessment will indicate that strengthening of the below functions is urgent.

**i) Results of the proposed cooperation**

- Development of a business model for the utilities clearly reflecting the ownership and organizational structure, and allocation of responsibilities and risks for operational management, infrastructure ownership and maintenance.
- Strengthening of the **internal administrative organization**, including HR development, as far as not yet dealt with by ZINWA, improving internal systems and procedures on tariff calculation and decisions, billing and payment procedures, application of GIS for various functions related to O&M;
- Provision of IT hardware and software and on site **performance based training** to ensure that HR and organizational capacity development will be effective and sustainable;

**ii) Activities already carried out (past 2 years)**

See section 5.3.1 ii

**iii) Competence required of the Dutch company/organization**

- The water supply company would enter into a longer term operational working relationship (least 3 years) with the Zimbabwean utility or catchment board;
- It would have internationally experienced technical staff available who would intermittently team up with the Zimbabwean utility. Additionally TA would be made available for interventions of greater intensity and longer duration;

**iv) Local stakeholder(s) to be involved**

- Ministry of Environment, Water and Climate, Ministry of Justice, Environmental Management Agency, Min. of Local Gov. others;

**v) Factors determining Success and Failure**

Success factors:

- Software and hardware are available in a balanced way to ensure successful upgrading of both at the level of the utility or catchment;
- Dutch staff are apprehensive of the causes of low inadequate performance and competent to appreciate these difficulties;

**6.4. Focal area: Utility Operational strengthening, Water sales and Commercialization**

Over the past decade the standards of operation at utility level, in qualitative and quantitative terms as well as in view of water sources development and waste water treatment have profoundly dwindled. All water companies in the company suffer in various ways for these weaknesses. For the water supply companies selected in this report the following interventions are outstanding and needed urgent address.

**6.4.1. Operations management, Tariffs, billing and payment arrangements**

**i) Result of the proposed cooperation**

Priority will be given to low capacity utilization at utility level, that tariffs are based on O&M and longer-term investments and that the efficiency of billing and collection of the water charges has improved. The council has approved ring-fencing of the utility' financial income and developed policies and procedures for sustainable O&M and capital investments. In greater detail the following will be addressed:

1. Provide capacity to develop, and in future upgrade, Utility' strategic, operational/SOP and investment plans;
2. Financial management, including water tariffs, ring fencing and local investment;
3. Efficiency in billing and collection of water supply-related charges;
4. Develop utility benchmarking and operational monitoring capacity to augment low capacity utilization of utilities and its infrastructure;
5. Address causes of high non-revenue water (NRW): provide knowledge, skills, software and hardware to establish water metered districts for water balancing;
6. Provide for water quality analysis capacity and means to improve the quality of water provided;
7. Provide for capacity to tender, procurement and outsource activities including contract management;
8. Basic system's hardware to be provided to ensure that the functionality of the infrastructure meets basic standards. Examples would be provision of bulk water valves, valve units to be installed for district metered areas to conduct water balancing in view of detecting water-unaccounted for, reticulation hardware for replacement to worn out section of the supply system etc.;
9. Introduce an efficient procedure for customer complaints and install effective response capacity;

**ii) Activities already carried out (past 2 years)**

In some of the towns in this proposed program ZINWA and external agencies already introduced improvements concerning tariffs, billing and payment efficiency. These include Nembudziya, Zimunya, Madziva, Lupane, Mataga, Gutu and Guruve. However tariffs and billing procedures are still manually carried out and with limited or no application of software. The rate of defaulting is high and hence the efficiency of billing scores low and is assessed to be well below 30-40%.

**iii) Competence required of the Dutch company/organisation**

The Dutch organisation has international experience with projects aiming at upgrading of tariff setting, billing and improving the corporate income of water supply organisations. This includes all aspects of dealing with HR

**iv) Local stakeholder(s) to be involved**

- Ministry of Environment – lead Ministry in the water sector
- ZINWA , Board, Management and Staff
- Ministry of Finance and Economic Development – engagement on payment of water bills for government and government departments
- Ministry of Local Government, Public Works and National Housing – ministry responsible for all local authorities in the country
- Local Authorities
- Ministry of Agriculture, Mechanisation and Irrigation Development & Department of Irrigation – for engagement of farmers and farmer organisation on payments
- Development Partners – supported some work on the policy and institutional reforms in Zimbabwe (World Bank, African Development Bank, and donor agencies)

**v) Factors determining Success**

- The process will have adequate political and financial support from the GoZ;
- Capacity development and training will be performance based and performance monitored;

- Staff will have a sense of belonging and will be more focused;
- If it improves staff morale in addition to transfer of skills and knowledge;
- The process will improve operational effectiveness and efficiency;
- Understanding the current systems and gaps in billing and collection of revenue used by ZINWA and Urban Local Authorities
- A clear understanding of organisational cultures of ZINWA and Local Authorities and identify interventions for sustainable operation of utilities
- Proper supporting Bills and Policies for operations of utilities in the country
- If it is successful in introducing mind-set change at the level of water users;
- Correct conduct of the needs assessment for human resources development and organisational capacity development in ZINWA and Local Authorities/Utilities level;
- Introduction of robust customer care functions in ZINWA and Local Authorities;

#### 6.4.2. Upgrading the Water-unaccounted-for menace

One of the major challenges facing the water utilities in Zimbabwe is the high level of water unaccounted for. If a large proportion of water that is supplied is lost, meeting consumer demands is much more difficult. Since this water yields no revenue, heavy losses also make it harder to keep water tariffs at a reasonable and affordable level. Water unaccounted for is the difference between the amount of water put into the distribution system and the amount of water billed to consumers. NRW is a good indicator for water utility performance, high levels of NRW typically indicate a poorly managed water utility.

Water unaccounted for comprises several causes. The **Physical (or real) losses** are leakages from all parts of the system and overflows at the utility's reservoirs. They are caused by poor operations. **Commercial (or apparent) losses** are caused by customer meter under-registration, data handling errors, and theft of water in various forms. **Unbilled authorized consumption** includes water used by the utility for operational purposes, water used for firefighting, and water provided for free to certain consumer groups, such as governments departments, militaries and police stations.

The amount of available NRW data in Zimbabwe is limited, and often questionable in terms of its reliability. The water utilities are not used to producing a water balance and therefore the split between physical and commercial and often the unbilled losses is rarely known.

The other problem is that information on average supply time, average pressure in the reticulation system, and the number of service connections is often not known and rarely published. This makes calculating meaningful NRW performance indicators nearly impossible. From discussions during the mission it is assumed that the level of NRW in the Zimbabwean water supply sector will range between 50-60%

#### i) Result of the cooperation proposed

In the cooperation proposed the following actions are trained to be carried out routinely by the Zimbabwean water company:

- To conduct of water balancing, how much water enters the network, and the amount that contributes to the utility's revenue water and non-revenue water;
- To prioritize target NRW components and developing a reduction strategy;
- To develop strategies of involving stakeholders, including management, operations staff, and the public, to implement the reduction strategy;
- To calculate commercial losses;

- To calculate physical losses;
- To establish District Meter Areas (DMAs) and using them to manage NRW;
- To monitor the utility's NRW management performance;

**ii) Activities already carried out (past 2 years)**

- Generally, the government has encouraged installing prepaid meters: City of Harare will be introducing a pilot on initially 2000 households on prepaid meters;
- Government has encouraged ring-fencing of water accounts so that revenue obtained from water is used in the development and management of water local supplies;
- Rusape town will shortly be introducing smart meters to industries;
- Development/Investment Plans have been developed for ZINWA, Chitungwiza (under Greater Harare), Bulawayo and Kwekwe

**iii) Competence required of the Dutch company/organisation**

- It has considerable international experience in addressing NRW;
- It is able to plan, design and support construction of the hardware required to address NRW;
- It is competent to train staff on achieving Results as mentioned above;

**iv) Local stakeholder(s) to be involved**

- Ministry of Environment – lead Ministry in the water sector;
- ZINWA, Board, Management and Staff;
- Ministry of Local Government, Public Works and National Housing – ministry responsible for all local authorities in the country;
- Local Authorities;
- Communities/Community leaders – participation in reduction of vandalism and reporting of pipe bursts;

**v) Factors determining Success and Failure**

Success factors:

- Long term application of systematic approaches and policies, which acknowledge that addressing NRW is essentially a governance issue and secondarily technical systems weakness;
- Ensuring that all numerical data in the process are reliable and ensure uploading to a data base;
- Link technical and managerial interventions to conclusive findings regarding NRW;

**6.4.3. Planning/Utility Benchmarking and Operational monitoring**

**i) Results of the cooperation proposed**

The Results are defined as follows<sup>11</sup>:

1. To formulate and develop a local benchmarking framework in Zimbabwe based on regional and international best practises.
2. To use the developed framework to collect relevant and statistically valid data from the service providers in order to assess and develop local and practical benchmarks. The local benchmarks would be progressively adjusted to international levels.

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<sup>11</sup>The Results quoted in this report are derived from WB-WSP, Peer Review Annual Report 2014, 'Service level bench marking for urban water supply, sanitation and solid waste management'

3. To prepare a citizenship feedback mechanism for periodically communicating service provider performance.
4. To prepare, based on experiences from data collection and analysis, a manual or standard handbook on the benchmarking process in Zimbabwe;

**ii) Related activities carried out (past 2 years)**

- AusAID, UNICEF, GIZ, AfDB, World Bank have been involved in a program of Service Level benchmarking. The following is progress to date:
- Data collection workshops held (2012);
- Data collection and research on the level of local authorities (2014);
- In 2015 the following is expected to be achieved:
  1. Visits to various local authorities
  2. Workshops and meetings
  3. Capacity development
  4. Performance improvement plans
  5. Handbooks and documentation

ZILGA (Zimbabwe Local Government Association) is the lead in the above activities.

**iii) Competence required of the Dutch company/organisation**

- Be able to establish long term working relationship with the water utility;

**iv) Local stakeholder(s) to be involved**

- Ministry of Environment – lead Ministry in the water sector
- ZINWA, Board, Management and Staff
- Ministry of Local Government, Public Works and National Housing – ministry responsible for all local authorities in the country
- Local Authorities
- Development Partners

**v) Factors determining Success**

- Whether reliable data is obtained from adequate indicators which will be translated into operational data and applied;

**6.5. Focal area: Capacity development on Procurement, outsourcing and tendering**

**i) Related activities carried out (past 2 years)**

- The Zimbabwe Procurement Act has just been revised and is still to be circulated
- Training on procurement procedures by the State Procurement Board
- ZINWA and some local authorities trained on World Bank Procurement Procedures though the training still needs to be extended to more staff members.

**ii) Result of the Intervention suggested**

- Improved operation systems
- Improved procurement efficiency – shorter lead time/best prices and quality
- Improved transparency and fairness

**iii) Competence required of the Dutch company/organisation**

**iv) Local stakeholder(s) to be involved**

- Ministry of Environment – lead Ministry in the water sector
- ZINWA, Local Authorities
- State Procurement Board
- Ministry of Finance and Economic Development
- Ministry of Local Government, Public Works and National Housing – ministry responsible for all local authorities in the country

**v) Factors determining Success**

- Support of the Government in implementing reforms in procurement systems by utilities
- Proper training of procurement staff
- Efficient monitoring of utilities' procurement

**6.6. Focal area: Human Resources Capacity development**

**i) Related activities carried out**

- Further development of Result Based Management;
- Skills Gap analysis conducted in ZINWA
- Introduction of performance management system (IRBM)
- Customer service training for ZINWA front offices staff
- Team building workshop

**ii) Result of the Intervention suggested**

The envisaged Results of these trainings and upgrading are:

- Establishment of a high performance culture;
- Improved customer/client relationships;
- Improved teamwork, unity and work efficiency;
- Improved access to and sharing of information through better records/data management;

**iii) Competence required of the Dutch company/organisation**

**iv) Local stakeholder(s) to be involved**

- ZINWA, Board, Management and Staff
- Local Authorities
- Institute of Water & Sanitation Development
- ZILGA
- Zimbabwe Manpower Development Fund
- Zimbabwean Training Institutions, e.g. Institute of Water and Sanitation Development;

**v) Factors determining Success**

- Willingness and ability of Dutch training institutes/trainers to cooperate with Zimbabwean institutions of training to provide such programmes locally;
- Motivation on the part of staff to be trained;

## 6.7. Focal area: Projects funded by African Development Bank (AfDB)

Since 2010, AfDB is financing projects through three facilities:

1. Zim-Fund.
2. African Water Facility.
3. ADB Public Sector.

AfDB is mainly involved with rehabilitation of sewerage works. The Bank is interested to partner with the Dutch water sector and suggested to meet to discuss involvement without duplication.

The need for software expertise to upgrade capacities in all institutions in Zimbabwe, ZINWA and Local Authorities is considerable. There is need to train personnel in planning and organization, management, preparation of tenders, capacity building. Hardware is required to bring infrastructures to its basic functionality in order to prevent of recurrence of the cholera epidemic (2008) which killed over 4000 people.

The following projects are currently under preparation:

- v) **African Development Bank/Zim-Fund:** Urgent Water Supply and Sanitation Infrastructure Rehabilitation Project Phase 2, Harare, Chitungwiza, Ruwa and Redcliff (\$ 36 million);
- vi) **African Development Bank/Zim-Fund:** Mutare Construction Water storage Dangamvura and Gimboki treatment works upgrading;
- vii) **African Development Bank/African Water Facility:** Marondera Integrated Urban Water Management (EUR2 million under preparation).
- viii) **AfDB Public Sector funding:**
  - Kariba Dam Rehabilitation Project (USD75million) – Co-financed with the World Bank (USD75 million), European Investment Bank (USD100 million, Government of Sweden (US25 million);
  - Bulawayo Water Supply and Sanitation Improvement – USD36 million under preparation. The Bulawayo project involves the replacement of collapsed sewers.

## 6.8. Focal Area: Opportunities for Dutch companies in supplies and procurement

The Zimbabwean water sector does offer a number of business development opportunities for the Dutch water sector in terms of supply and procurement. This section does summarize the major areas where Dutch companies and businesses can be involved:

8. Supply and/or manufacturing of water treatment chemicals;
9. Supply of smart and prepaid water meters;
10. Supply of various pipe works and related hardware;
11. Supply of various excavation equipment;
12. Water quality assurance, including laboratory equipment;
13. Various borehole drilling equipment;
14. Hydropower Development.

These options are briefly worked out below including a number of annexes referred to.

### 1. Supply and/or manufacturing of water treatment chemicals

The City of Harare, due to poor quality of water uses 8 or 9 chemicals for treatment of water. This amounts to an expenditure of approx. \$ 3 million/month. These chemicals are predominantly imported from a number of countries. Reference is made to annex 8.

Other municipalities also use a large quantity of imported chemicals for their water treatment: ZINWA spends \$700 000/month for this group of municipalities. Chemicals have been financed by UNICEF, especially after the cholera outbreak of 2008. With the foreseen improvements in water management, which includes sources development and maintenance, distribution, billing and collection, each water supply company should be able to pay for its own chemicals and for its own other water related development.

It is expected that Dutch companies which manufacture or can supply chemicals (refer to **annex 8**) in relevant quantities. Special mention is made of activated carbon which currently imported from China. Zimbabwe has an abundance of coal reserves, Hwange area, so there will be merit if there would be Dutch Companies going into a joint venture with ZINWA to build an activated carbon manufacturing plant in Hwange.

## **2. Supply of smart and prepaid meters**

At the time of writing this, requirements had not been made available for Harare and the other cities but ZINWA requires the following meters as listed in the table below and financing. The World Bank will be approached for financing of this but Dutch Companies that can provide these sizes of meters should be identified. (**Annex 9**)

## **3. Supply of various hardware for piped systems**

Increasingly PVC piping is being used for replacement of old pipes as well as new infrastructure. Miscellaneous pipe sizes as required are listed in annex 10 as required by ZINWA for supply systems in the smaller towns.

## **4. Supply of excavation equipment**

Replacing burst pipes is often time consuming as excavation for replacement is most often done manually. Currently virtually all towns and cities will require back-actors/excavators to carry out repairs and maintenance of infrastructure. Procurement of this equipment is needed for clear and raw water as well as for sewage infrastructure.

## **5. Water quality assurance**

For all water supplied water quality testing equipment needs to be procured. In annex 11 equipment requirements for quality assurance for ZINWA is summarized.

## **6. Borehole Drilling**

Aquifer developed is planned to be carried out, especially in the Western and South Western drier parts of Zimbabwe. GIZ has assisted in the Nyamandlovu aquifer, which initially had 77 boreholes feeding into Bulawayo water supply. Research is carried out to extract from undeveloped aquifers.

## **7. Hydro Power Development**

The Government of Zimbabwe is on a big drive of developing hydropower in the following modes:

- Existing dams.
- Dams under construction.
- Dams under design.

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- Run of the river.

Dutch companies can be involved in JV's joint ventures, BOT, BOOT and other financing models.

## **6.9. Brief description of Bulawayo, Kwekwe, Harare-Chtitungwiza, Mutare and Marondera urban supplies, identified for cooperation with the Dutch sector**

### **Bulawayo city Water Supply**

The City is supplied from five dams around the city with a combined capacity 414,620,000m<sup>3</sup>. Ground water from the Nyamandlovu Aquifer also augments supply to the city. Due to low rainfall in the catchment area of these dams, the city is faced with chronic raw water supply shortages. The city institutes an almost permanent water rationing programme. Various consumer categories are allocated daily consumption limits and deterrent penalties are charged on consumptions above the limits. On average, the city starts shedding water from around July depending on the amount of water impounded in the storage dams the previous year. Water shedding entails cutting water supply for certain periods which maybe up to five or six days per week during drought years.

The demand is generally reported as 130ML/day though this is a depressed figure due to the water rationing and water shedding programmes. The treatment facilities are currently producing an average of 120ML/day. The city's infrastructure, like any another Zimbabwean urban local authority, needs rehabilitation and replacement in some cases where it has outlived its economic lifespan. The water losses are reported to be around 59% and most of the production is lost in transmission and distribution. There are about 122,000 connections in the city and of which about 18,000 of these meters are non-functional. The population is 653.337 persons (2012 census)

Bulawayo is selected as it is the second largest city of Zimbabwe where levels of water supply have deteriorated seriously. It has been trying to improve the water resources for years for instance by building dams in the vicinity of the city. Government also built sources of water supply for Bulawayo but due to the growing population, dilapidated infrastructure and lack of adequately resources and trained staff, drinking water supply standards are no longer adequate both in quantity and quality. Plans are being developed to convey water from the Zambezi River, some 400km away since 1934! Bulawayo also gets water from Nyamandhlovu Aquifer and has identified another aquifer for development. Bulawayo has closed most of the manufacturing companies.

### **Kwekwe town Water Supply**

The City of Kwekwe supplies water to its residents for about 22 hours per day. This is however due to the fact that the major steel manufacturing industry where the majority of the water used to be consumed at is currently taking very low amounts of water due to very low capacity utilisation. The resuscitation of the industry is expected to increase pressure on the water supply infrastructure and reduce the water available to domestic consumption.

The water supply infrastructure needs rehabilitation to reduce physical water losses. Most of the pipelines and fittings are leaking the town estimates that its non revenue water is around 50% which compromises sustainability of the water supply scheme. Over 50% of the consumer meters are also not working and need replacement to improve the billing and customer willingness to pay. The Proman

Billing software also needs to be upgraded or replaced with a more modern billing software to enhance the billing system. The number of people in Kwekwe and nearby Kadoma is 48 265 (2012 census)

Kwekwe is one of the towns in Zimbabwe which supplies water 24/7 but supply and quality are fast going down and will continue doing if the situation is not arrested. There is need to improve water supplies, capacity building, billing, metering and collection. Kwekwe houses the biggest iron and steel company and mine in Zimbabwe which is no longer functioning due to various reasons shortage of water being one of them. Kwekwe also supplies water to a nearby town, 10km away, called Redcliff. This town grew up from the iron and steel mine but water services have gone down. Thus this town contributes enormously to the economy of Zimbabwe

### **Harare-Chitungwiza city Water Supply**

Water supply to Chitungwiza is from Prince Edward Waterworks which is operated by Harare City Council and has a capacity of 90ML/day. Due to the serious water shortages faced by the City of Harare, only 20 to 30ML/day is supplied to Chitungwiza which has an estimated demand of 62ML/day for a population of over 350,000.

Chitungwiza Town Council Supplies water to residents about twice a week and the average hours of supply per day is 1.7hrs/day. Demand is growing and the Council has about 20,000 approved stands that it need water and wastewater infrastructure. The housing waiting list for the town stands 80,000 people waiting to be allocated stands. The pumping main from the waterworks to Chitungwiza has a capacity of 45ML/day and needs upgrading. Storage capacity for the city is currently 42.4ML and is insufficient to provide the standard two day storage if enough water supply was available the City of Harare. The population, according to the 2012 census is 356.840 persons. In discussions with various persons it was noted that the actual number of inhabitants may well be more than double that figure.

Rationale for identifying Chitungwiza stems from the numbers of population (officially 350.000 but said to number well over 1 million) and the prevailing standards of supply. Chitungwiza is the biggest of Harare's 4 satellite towns, a population 4 times bigger than Zimbabwe's third largest city of Mutare. It does not have its own source of water yet to feed the existing water supply: some investment in source development would be a quick win which would greatly improve its water supply. Two dams have been identified to improve water sourcing. Reducing non-revenue water, metering, billing and collections are a priority. The sewerage system has been greatly improved by donor agencies. Currently water is received from Harare but shares the running of a treatment plant, however both supply and treatment are running deeply below the demand.

### **Mutare city Water Supply**

Mutare has two sources of raw water, which are the Pungwe River (which flows into neighboring Mozambique) and Small Bridge Dam. Water from Pungwe is supplied through a gravity 46km gravity main that has a 4.1 km tunnel through mountains. The city's treatment facility has a capacity of 75ML/day and receives 60.4ML/day from Pungwe and the balance from Small Bridge Dam. The average daily output of the treatment plant is however being pushed to 85ML/day in an attempt to meet the demand estimated at 90ML/day. Water from Pungwe River is very clear and the city can afford to overload the treatment plant.

Water supplies to suburbs (mainly Danagmvura) farthest from the waterworks receive erratic supply of water. The residents get water roughly on alternating days while others are rationed to allow water to

reach these areas. Non-revenue water is estimated to be around 50% and most of it is lost in the old suburbs of Sakubva where there are communal taps and sanitation facilities used by some residents. Vandalism of communal connections is commonplace. According to the formal statistics (census 2012) the population is 88.630.

Mutare is the third largest city in Zimbabwe. This city has arguably the best quality, and enough quantity, of water in Zimbabwe. Their main problem is coverage, distribution and sewage disposal. Improved standards can be achieved as long as the work is segmented to different parts of the city with greater organisational effectiveness of the utility and treatment. Mutare used to supply free communal water to high-density suburbs but has since been making efforts to meter all residents. It requires assistance in capacity building, metering, billing and collection. Mutare is the Eastern Gateway into Zimbabwe from Mozambique and Beira hence has a lot of border activities. So water supplies have to be at their best to prevent diseases etc.

### **Marondera Town Water supply**

Marondera Town is a town some 75km east of Harare. ZINWA built a dam, Wenimbi Dam, some 18 km south of Marondera, and 2 pump stations to supply raw water to the treatment works of Marondera. The treatment works can only digest half of the raw water fed to them. So this can be an interesting to consider with the AfDB where the bank can do the hardware and the Netherlands can provide the software.

## 7. The way forward

The consultants will deliver the draft mission report to EKN, RVO/NWP before July 6, 2015. Comments are requested by the consultants from the institutions before July 13. It is noted that there is no such timeline in the ToR. After the comments have been entered in the report it is formalized as the final mission document. EKN/RVO will request NWP to communicate with the Dutch sector and make the report available. At the same time the report will be made available to the Government of Zimbabwe and institutions related to the drinking water sector. In the Netherlands, NWP will call for a meeting with the Dutch drinking water stakeholders about the options of cooperation with the Zimbabwean drinking water sector as mentioned in the report. The outcome of this meeting will be communicated with the Zimbabwean stakeholders.

In the months preceding to the Amsterdam International Water Week (November 2-6, 2015) the participants of the incoming mission will be selected by the GoZ and EKN and a program composed by NWP.

### 7.1 Zimbabwean delegation visit to the water industry in the Netherlands

The ToR does request the team to put forward suggestions for the planning of a visit of senior persons from the Zimbabwean drinking water sector to the Dutch sector. It is proposed that the visit will take place during the first week of November as the mission members would be able to participate in the International World Water Week<sup>12</sup> (AIWW, November 2-6, 2015). Preliminary the following names are suggested by the team:

- 1- Hon Minister of Environment, Water and Climate + aide
- 2- Hon Minister of Local Government + aide
- 3- Director of Water Resources, Planning and Development
- 4- Board Chairman, ZINWA
- 5- CEO, ZINWA
- 6- Chitungwiza, Town Clerk and Town Engineer
- 7- Bulawayo, Town Clerk and Director of Engineering Services
- 8- Mutare, Town Clerk and City Engineer
- 9- Kwekwe, Town Clerk and Town Engineer

The above may add up to a group of 15 persons.

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<sup>12</sup> <http://internationalwaterweek.com/programme/aiww-conference/>

## Attachments- ANNEXES

### Annex 1: Terms of Reference

<b>Advies Plan: Study visit to the Netherlands for drinking water sector Zimbabwe</b>	
<b>Advies RVO.nl</b>	<b>Positief</b>
<b>Datum advies</b>	25 Feb 2015
<b>General</b>	
<b>Identified by</b>	EKN Harare
<b>Date of identification</b>	January 2015
<b>Country</b>	Zimbabwe
<b>Counterpart (s)</b>	RVO, EKN Harare, NWP
<b>Beneficiary (ies)</b>	<b>National Water Authority (ZINWA)</b>
<b>Execution: Netherlands implementing team</b>	Suggestion: NWP
<b>Budget</b>	
<b>Start</b>	March 2015
<b>Project duration</b>	Two weeks (3 days needs assessment in Zimbabwe and 1 week study visit to The Netherlands)
<b>Project information</b>	
<b>Project purpose</b>	Needs assessment and study visit for relevant stakeholders in Zimbabwe's drinking water sector. The needs assessment should identify the major needs for ZINWA, the Ministry of Water, the water companies and the municipalities when it comes to managing drinking water supply services in Zimbabwe, with a view of what the Netherlands could provide them in terms of knowledge, capacity building and management services. We expect that the needs assessment will primarily show "software needs" how to legislate, organize, plan, prepare, tender, manage, train, capacitate etc. Of course there is also a need for new hardware (water infrastructure) for which Dutch companies could be in the market as a result down the line. Even with the existing infrastructure, drinking water supply can be significantly improved. The consultants should identify the key people who should go to NL for a study visit (decision makers/ influentials from within this sector in Zimbabwe). They could also come up with recommendations on who to include in the visit program from the NL side.
<b>Institutional setting</b>	See next field problem analysis as the institutional setting and the current transition taking place is the problem/challenge at the moment.
<b>Problem analysis</b>	The Embassy in Harare has been approached over the last year by several representatives from the drinking water sector in Zimbabwe. It seems there is an increasing interest to learn from the Netherlands in terms of managing drinking water resources. The government of Zimbabwe is in a process of reorganizing its National Water Authority (ZINWA) which would allow for independent water operators to assume a role in drinking water supply and delivery. The local private

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	sector is interested, but has little experience/expertise to offer. Municipalities are key players as well, but most have a lack of capacity in administering water supply institutions. Several donors are investing in the sector, especially in the big and medium sized cities. Promising discoveries have been made in the arid south of Zimbabwe, with aquifers possibly being a solution to water scarcity in that part of the country
<b>Results</b>	<ul style="list-style-type: none"> <li>• Better understanding of privatisation of drinking water delivery</li> <li>• Better understanding of regulatory frameworks</li> <li>• Zimbabwean stakeholders establish contacts with key Dutch organisations in drinking water sector</li> </ul>
<b>Activities</b>	Needs assessment in Zimbabwe by NWP in cooperation with local Zimbabwean consultant Visit of Zimbabwean stakeholders to The Netherlands in which knowledge transfer and matchmaking takes place
<b>Observations for further development</b>	EKN Harare has no expertise on drinking water management. To be able to set up a tailor-made meaningful program, a short needs assessment should be undertaken in Harare in order to be able to set up a meaningful mission to The Netherlands. A mission of Dutch companies and other stakeholders to Zimbabwe could be a follow up if there are enough business opportunities for the Dutch and if Dutch expertise is required in order to set up smart management of drinking water resources.

## **Annex 2: Constitution Watch: the Constitutional Right to Water**

### **CONSTITUTION WATCH 13/2015**

**[26th June 2015]**

#### **The Constitutional Right to Water**

##### **Introduction**

Since time immemorial it has been acknowledged that water is important for people to lead their lives in human dignity. Water is a prerequisite for the realisation of other fundamental human rights too, like the right to health and the right to a safe and clean environment.

The right to water has been recognised in a wide range of international treaties, declarations and in a number of national constitutions. For instance, Article 14(2) of the Convention on the Elimination of All Forms of Discrimination Against Women and the constitution of South Africa.

The subject is topical as a Water Resources and Infrastructure Investment Conference attended by 300 government and investment delegates from different countries is now taking place in Harare. Vice-President Mnangagwa opened the conference and deplored water shortages, the fact that water was not available to the vulnerable in our society, that women and children in poor communities suffered most having to walk long distances in search of water, and the high incidence of disease caused by lack of or contaminated water.

##### **What the Constitution says about the Right to Water**

The current Constitution of Zimbabwe in its Declaration of Rights enshrines socio-economic rights, the so-called second generation rights, and among them is the right to water. According to section 77:

“Every person has a right to –  
(a) safe, clean and potable water

.....

and the State must take reasonable legislative and other measures, within the limits of the resources available to it , to achieve the progressive realisation of this right.”

Enshrining the right to water in the Declaration of Rights is a welcome development since the Water Act and other legislation dealing with water did not provide in specific terms for a right to water. The inclusion of the right to water in the Declaration of Rights entails that the right is justiciable, i.e. it can be enforced by the courts.

##### **Interpretation of the right**

Section 46 of the constitution sets out guiding principles on how courts must interpret constitutional rights, including the right to water. According to the section, when interpreting the right a court:

- ☐ must give full effect to the right. In other words, the right must be interpreted widely rather than narrowly,
- ☐ must take into account international law and all treaties and conventions to which Zimbabwe is a party, and

☐ may consider relevant foreign law, including court decisions of other countries.

To understand the nature of the right to water, one must understand the nature of the obligations imposed by it. Constitutional rights impose both negative obligations upon the State [*in the case of the right to water, this means the State must not deliberately limit the right*] and positive obligations [*i.e. the State must fulfil, promote and protect the right*].

Since the Constitution was promulgated there has been only one case dealing with the right to water [*Mushoriwa v City of Harare, decided in 2013*]. The learned judge did not canvas the content and scope of the right but rather dealt with only one negative obligation of the right: he said it was a violation of the right for the City of Harare to disconnect water without a court order. A South African court in a similar case came to the same conclusion.

In international law the UN Committee on Economic, Social and Cultural Rights, General Comment 15 [2003] gives useful guidance on how the right to water is to be interpreted. According to the comment, while adequacy of water required for the right may vary according to different conditions, there are certain minimum standards that cannot be varied:

- ☐ the water supply for each person must be sufficient and continuous for personal and domestic uses [*availability*],
- ☐ the water must be safe; that means, amongst other things, that it should be of acceptable colour, odour and taste [*quality*], and
- ☐ the water must be accessible to everyone without discrimination [*accessibility*], and accessibility includes physical, economic and informational accessibility.

### **Limitation of the Constitutional Right to Water**

The right to water, like other socio-economic rights in the Zimbabwean Constitution, is subject to two limitations.

**Firstly** section 77 states that the State must take measures to implement the right to water, but only “within the limits of the resources available to it”. In South Africa, where the constitution has a similar provision, the courts have interpreted this as follows:

- ☐ In assessing the reasonableness of a government programme for implementing a socio-economic right, a court will not enquire whether other more desirable or favourable measures could have been adopted or whether public money could have been better spent. Rather the court will decide reasonableness on a case by case basis. The courts will avoid encroaching too far into issues of governmental policy, in line with the concept of separation of powers.
- ☐ Legal, administrative; operational and financial hurdles to implementing the right should be examined and where possible lowered over time. The right need not be implemented immediately but the state must nevertheless take measures that result in continuous progress in the fulfilment of the right, and there must be benchmarks that show this progress.
- ☐ The State is not required to do more than its resources permit it to do, but it has a duty to ensure the widest possible enjoyment of the right under the prevailing circumstances.

**Secondly:** the right to water is subject to section 86 of the Constitution which allows most rights in the Declaration of Rights to be limited, so long as the limitation is “fair, reasonable, necessary and justifiable in a democratic society based on openness, justice, human dignity, equality and freedom”.

The State bears the burden of proving that any limitation is fair, reasonable, necessary, etc. Because the right to water is such an essential right, it would be difficult for the State to prove any limitation is justifiable.

### **Zimbabwe Statute Law on Provision of Water**

Zimbabwe statute law has long recognised the importance of the right to water and the duty of the State and local authorities to provide their people with adequate water.

#### **Section 64(1) of the Public Health Act:**

(1) Every local authority, when required to do so by the Minister, shall provide and maintain, or cause to be provided and maintained as far as may be reasonably possible, a sufficient supply of wholesome water for drinking and domestic purposes, whether such supplies be derived from sources within or beyond its district, and for such purposes it may purchase or otherwise acquire any land, water works, springs, fountains, water rights and premises, or rights incidental thereto, within or outside its district, and may construct, equip and maintain any works necessary for collecting, pumping or storing water.

#### **Section 66 of the same Act:**

All water works vested in any local authority shall be maintained by the local authority in a condition for the effective distribution of a supply of pure water for drinking and domestic purposes.

And ZINWA the National Water Authority is also charged with supplying people with water.

#### **Section 5 of the Zimbabwe National Water Authority Act (Functions of ZINWA):**

(c) to exploit, conserve and manage the water resources of Zimbabwe with the object of—  
(i) securing equitable accessibility and efficient allocation, distribution, use and development; and  
(ii) providing, in both the short and the long term, adequate water on a cost effective basis; and  
(d) to promote an equitable, efficient and sustainable allocation and distribution of water resources; and  
(e) to encourage and assist local authorities in the discharge of their functions under the Rural District Councils Act [*Chapter 29:13*] and the Urban Councils Act [*Chapter 29:15*] with regard to the development and management of water resources in areas under their jurisdiction and in particular, the provision of potable water and the disposal of waste water.

### **Conclusion**

The right to water is adequately protected in the Zimbabwean Constitution and in statute law. It is up to the government and the local authorities to give practical affect to the basis human right to water.

*Veritas makes every effort to ensure reliable information, but cannot take legal responsibility for information supplied*

Final report Capacity building for Zimbabwean local urban authorities in water supply needs assessment and business opportunities report, July 2015

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### Annex 3: Persons/Resources and Leadership met

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## **Annex 4: Scoping Paper towards increased cooperation between the Water sectors in Zimbabwe and the Netherlands (dd. March 2015)**

### **LIST OF ACRONYMS AND ABBREVIATIONS**

#### LIST OF ACRONYMS AND ABBREVIATIONS

AfDB:	African Development Bank Group
AMCOW CSO:	African Ministers Conference on Water Country Strategy Overview
AWF:	African Water Facility
EHD:	Education and Human Development
EKN:	Embassy of the Kingdom of the Netherlands
EMA:	Environmental Management Agency
GNU:	Government of National Unity
GOZ:	Government of Zimbabwe
IFIs:	International Financial Institutions
IMF:	International Monetary Fund
IWSD:	Institute of Water and Sanitation Development
JMP:	Joint Monitoring Plan
MEPBF:	Macro-Economic Policy and Budgetary Framework
MoE:	Ministry of Environment
MoHCW:	Ministry of Health and Child Welfare
MDGs:	Millennium Development Goals
MTP:	Medium Term Plan
MLGRUD:	Ministry of Local Government, Rural and Urban Development
MWRDM	Ministry of Water Resources Development and Management
NAC:	National Action Committee
NCU:	National Coordination Unit
NHST:	National Hygiene and Sanitation Taskforce
NWP:	Netherlands Water Partnership
RVO:	Rijksdienst voor Ondernemend Nederland
RD/UC:	Rural District and Urban Councils
STERP:	Short Term Emergency Recovery Programme
UWSSR:	Urgent Water Supply and Sanitation Rehabilitation Project
USD/\$UD:	United States Dollars
WB:	World Bank
Zim-Fund:	Zimbabwe Multi-Donor Trust Fund
ZINWA:	Zimbabwe National Water Authority

# Scoping Paper towards increased cooperation between the Water sectors in Zimbabwe and the Netherlands (dd. March 2015)

## Introduction

This Scoping Paper has been drafted at the request of the EKN in Zimbabwe to serve as a starting point for closer cooperation between the water sectors in Zimbabwe and the Netherlands. This paper focuses in general terms on the needs and demands that exist in the Zimbabwean drinking water and sanitation sector and the related local stakeholders. These would primarily include Zimbabwe national water Authority (ZINWA), the Ministry of Water, the water/water treatment companies and the local governments, e.g. municipalities, local/rural councils. It describes in brief the prevailing conditions which are decisive for cooperation with the Dutch water sector. This paper provides direction for a water sector reconnaissance and needs assessment mission yet to be carried out by the Dutch sector in Zimbabwe.

## 1. Background

In the late 1990s, Zimbabwe was among the top ranking countries in the provision of basic water supply and sanitation services in sub-Saharan Africa. After the turn of the century, due to a declining economy and political crisis, the country's infrastructure collapsed with severe socio-economic impacts. These reached their worst level in 2008/9 with the devastating cholera epidemic that took the lives of more than 4,300 people, mostly in the urban and peri-urban areas in the country. With support from development partners, extensive emergency operations were carried out in order to halt the spread of the epidemic. The political, social and economic turmoil of this period saw the deterioration of physical infrastructures as well as the institutional capacity to manage them.

The recession and hyperinflation which saw a rapid decline in the water and sanitation sector and a humanitarian crisis evidenced a turning point in 2009, since when the government has been motivated anew to restore the sector to the standards that once made it a model for African sector development. GoZ emphasized the rehabilitation of water supply and sanitation infrastructure in its national plans – the Short Term Emergency Recovery Programme (STERP) of February 2009, the Macro-Economic Policy and Budgetary Framework (MEPBF) of December 2010-12, and the Medium Term Plan for 2011-15. In support of this effort, the first phase of the Urgent Water Supply and Sanitation Rehabilitation Project (UWSSR, US\$ 29.651 million) from Multi-Donor Trust Fund (Zim-Fund) was approved in April 2011<sup>13</sup>.

Several multilateral and bilateral efforts are now finding place to upgrade the sector's standards of performance and services to the populations, in recognition that i) investments are needed to repair and rehabilitate physical infrastructures, ii) institutional capacity has suffered from the exodus of skilled staff and significant under-staffing, iii) WASH education is needed at

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<sup>13</sup> African Development Bank, 2013, Urgent water supply and sanitation rehabilitation project, Phase 2;

community level, and iv) a financially viable water sector will be essential for future impact, sustainability and functionality.

## **2. Coverage and WASH-related health statistics**

The water and sanitation coverage data varies significantly and may often be unreliable, mostly related to weak sector monitoring. Data from Zimbabwean sector agencies indicates that total population coverage for access to improved drinking water and sanitation<sup>14</sup> may be around 30% for sanitation and 40-50% for water supply. A study of the water and sanitation conditions in Masvingo town<sup>15</sup> and other studies identify the following factors causing poor water services and sanitation infrastructure: poor functioning of the infrastructure, economic challenges, lack of knowledge and skills, illegal connections, power shortages, climate change, pollution and contamination of water resources, and population growth.

A 2004 assessment of rural water, undertaken in the middle of the period of decline, estimated that at least 75% of 47,000 hand-pumps in the country were non-functional – a figure likely to have worsened since. For both urban and rural populations counted as having access to water, water quality is often poor and associated with intermittent supply and longer walking distances. Water treatment is made difficult not only due to dilapidated infrastructures but also intermittent electricity supply for pumping and plant operations, as well as the lack of chemicals.

Health statistics in Zimbabwe vary strongly from place to place and between the agencies, but the common picture they paint is one of the bleakest in Africa. A recent demographic and health survey<sup>16</sup> shows nearly 700 incidences of diarrhoea in children under age 5 in the representative sample of 11,000 households surveyed. The survey shows under-5 mortality rates having risen to 84 in the last 0-4 years, from 62 deaths per 1,000 births 10-15 years ago. The World Bank's worse estimate of 90 deaths per 1,000 births published in 2009, shown below, is most likely a facet of sampling methodology, but is consistent with the trend of worsened water-related health conditions.

Despite uncertainty about the viability of the numerical estimates of coverage, and variation in health statistics between sources, there is clearly a great need for rehabilitation and service quality improvement.

## **3. Comments on the current status quo of the Urban Water and Sanitation sector**

Urban water services, based on national utility data, have declined from their once high standards. Failure to repair or maintain already ageing infrastructure has led to a severe decline in services. Reports from urban settlements, including growth centres, give a consistent picture

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<sup>14</sup>ISF- UTS (2011) *Zimbabwe Water, Sanitation and Hygiene Sector Brief*, prepared for AusAID by the Institute for Sustainable Futures, University of Technology Sydney, October 2011, derived from UNICEF CSO/JMP.

<sup>15</sup> Challenges to the urban water sector in Zimbabwe: Masvingo urban water and sanitation services.

<sup>16</sup> Zimbabwe National Statistics Agency (2011) *Zimbabwe: Demographic and Health Survey 2010-11 - Preliminary Report (English)*. Available at <http://www.measuredhs.com/pubs/pdf/PR6/PR6.pdf>.

of high levels of unaccounted-for water, distribution systems in need of repair, and effluent and raw sewage outflows entering rivers and dams, which are often the major sources of bulk water supply. A great many water treatment plants are dysfunctional, do not have the power to pump consistently or lack chemicals. Intermittent power supply to water services is a major contributing factor. Again, however, there is a substantial discrepancy between the JMP/governmental figures and national estimates from the sector.

### **3.1. Urban Water and Sanitation projects currently implemented**

A number of large urban water projects are funded and implemented in the country. The AfDB ‘Zimbabwe Urgent Water Supply and Sanitation Rehabilitation project Phase 2’ (2013) target area includes the four urban areas of Harare, Chitungwiza, Ruwa and Redcliff and is aimed to benefit nearly 1.9 million people. The UNICEF/AusAID Small Towns Water, Sanitation and Hygiene program has 500,000 beneficiaries (including residential areas in Bindura, Chipinge, Cheredzi, Chivu, Gokwe Gwanda, Mwangi, Karoi, Mutoko, Mvurwi, Plumtree, Rusapi and Zvishavane). Several multilateral and bilateral organisations are currently involved in rehabilitation of the sector.

### **Urgent areas for future and short-term interventions, opportunities for Zimbabwean/Dutch water sector cooperation**

On account of the fast rate of (peri-)urban growth, specific strategies will be required to address these basic drinking water and sanitation needs. The most urgent areas –with emphasis on ‘software’ capacity development- for interventions include:

#### **Operational domain:**

- i) Planning to upgrade, rehabilitate and operate ageing infrastructure systems including storage facilities, treatment works, pumps, and pipe mains resulting in high uncontrolled/ unadministered water losses and wastage (procedures for water balancing);
- ii) Addressing ability and willingness to pay for unreliable services, particularly in high-density housing areas in conjunction with improved and mapping the scale of inadequacies of user consumption metering and billing;
- iii) Assessment and O&M planning of unavailable/inadequately functioning of water conveyance structures to deliver water from the dams to intended point of use;
- iv) Capacity and technical assessment and management/admin capacity development of overloaded, aged and in some cases non-functioning sewage treatment plants, impacting safe effluent and sludge handling and management;
- v) Mapping the frequency and intensity of power outages, impacting pumping and treatment plants;

#### **Sector Capacity development:**

- vi) Addressing widespread skills flight and limited technical capacity (government and contractor level);
- vii) Drafting a short and medium term plan for the creation of autonomous utilities;

- viii) Support to Water Resources and Environmental Management, as far as related to water and wastewater management;
- ix) Mapping overall deficiencies in view of relevant skills and knowledge;

**Institutional/policy domain, including restructuring:**

- x) Identifying the key areas of improvement of the outdated legal framework, advising on lack of adherence to existing legislation and weak policy implementation;
- xi) Balancing and creating improved effectiveness of communication and management between ZINWA and local authorities;
- xii) Strategy development regards development of competent Public-Private Partnerships;
- xiii) Provide insight and support in planning of the breakdown of the ‘parallel development’ process, through which urban expansion was managed in the past resulting in new settlements without access to water and sewerage systems;

**Sector funding and costing aspects:**

- xiv) Planning of internal and external funding for operation and maintenance, rehabilitation and expansion;
- xv) Addressing operational deficiencies resulting from low cost recovery due to inadequate billing and collection systems and lack of pro-poor policies;
- xvi) A pro-poor tariff-setting process that is not based on actual costs.

**3.2. Linkage with the Dutch Water sector and comparative advantage**

With three major European rivers flowing through its borders and into the sea, the Netherlands has developed cutting-edge experience in flood control, water management, drinking water supply and purification and sludge handling and management. Today, The Netherlands is home to the world’s ten best water engineering firms as well as a large network of smaller companies which offer specialist and cost-effective solutions in the drinking-water and sanitation sector. Skilled universities and NGOs operate worldwide in the field of water, agriculture and international cooperation. Research institutes, universities and (local) government maintain a high standard of knowledge and management. Very often the Dutch organizations form alliances to deliver tailor-made water solutions.

The water supply companies in the Netherlands are world leaders in the field of water technology, and lead the way in developing durable and functional drinking water supply systems, the purification and re-use of water and the related administrative, policy planning and management capacities.

In terms of output and impact, Dutch aid worldwide over the decades has contributed to the build-up of a tremendous body of knowledge and experience concerning all aspects of the water sector – including ground/surface water hydrology, drinking water supply, wastewater treatment and sludge management, and integrated water resources management – taking into account climate change effects, data management within the related institutions, and agricultural and domestic water use with documented improved access and productivity.

Considerable results have been achieved in the areas of institutional development, capacity development, decentralization processes and sector reform.

The Dutch Water Sector organisations are closely involved with water sector programming and/or implementation in Africa, and more specifically in South Africa and Mozambique as well as other countries in the Southern African region. In South Africa, a considerable number of Dutch organisations work in joint ventures arrangements or have established their own businesses in civil engineering in the water sector, or in urban water management and sewerage projects. It is recommended to explore the added value of the Dutch water sector in South Africa for participation in Zimbabwe's water sector development.

In developing bonds between the Zimbabwean and Dutch water sectors it should be noted that due to the economic and political processes in Zimbabwe there are vested opinions about the feasibility of such involvement. Some of these opinions may need review in order to foster these relations. Considerable attention is needed from EKN, RVO and NWP to inform the Dutch water sector about the realities on the ground and the opportunities which exist in a –potentially – essentially competent professional water sector in Zimbabwe.

#### **4. Sector governance**

Zimbabwe has a history of decentralised management that predates independence, whereby local authorities' water and sewerage departments provided urban and town services primarily funded by revenues collected from urban consumers. This became ineffective over recent decades and in 2010 plans were made to restructure sector development, in order to create greater clarity in sector leadership and ministerial roles and responsibilities, and provide a coordination framework. Some of the key national-level outcomes are summarised below:

- Overall leadership of the entire water sector is provided by the Ministry of Water Resources Development and Management (MWRDM) which chairs a redesigned NAC, responsible for sector coordination.
- MWRDM is responsible for making water resources policy, and regulatory functions implemented by ZINWA.
- The Ministry of Local Government, Rural and Urban Development hosts, establishes policy and supports the planning operations of Rural District and Urban Councils.
- The Ministry of Health and Child Welfare is responsible for rural sanitation, environmental health education and public health.
- The Ministry of the Environment has responsibility for enforcing water pollution control through the Environmental Management Agency.

Important sector players would be the National Hygiene and Sanitation Taskforce (2010) chaired by the Ministry of Health and Child Welfare and reporting to the NAC, with the mandate to develop a strategy to address meeting the sanitation MDG. The Institute of Water and Sanitation Development would provide for sector capacity development.

Outstanding institutional challenges that are still to be addressed include the establishment of an independent regulator, a single comprehensive sector policy and strategy, facilitation of

greater private sector participation, improving capacity of public and private sector institutions, and strengthening citizens' voice and sector responsiveness. (2010 AMCOW)

#### **4.1. Sub-sector governance: Urban water**

A recent AfDB report on Zimbabwe<sup>17</sup> states that the major urban areas are divided into 31 administrative units, comprising 6 cities, 9 municipalities, 13 town councils and 3 local boards. Local authorities have responsibility for urban water distribution and billing, while ZINWA is responsible for bulk water supply, except in the case of some smaller towns and settlements where ZINWA is responsible for water supply and sanitation. The Ministry of Local Government, Rural and Urban Development supports local authorities with their planning operations. Councils do however need greater support with capacity development for investment planning and implementation, and all associated activities.

The AMCOW assessment of the country's reform progress along the service delivery pathway indicates that local councils have much to do in order to create an enabling environment with realistic policies, plans and budgets. With the exception of the main cities, councils have no audited accounts or balance sheets, nor consolidated asset and location inventories. Plans for service expansion have costings that are mostly out of date and need reworking. In order for councils to become financially viable and attract new investment, regulations including tariff guidelines and performance benchmarks are required.

#### **4.2. Sub-sector governance: Urban sanitation**

Institutional arrangements for urban sanitation are similar to those for urban water, with local councils responsible for urban sanitation. Service coverage levels in Zimbabwe were once very high relative to other African countries, and still outperform many. However, service management has been widely neglected with the exodus of skilled staff. The sector needs a strong capacity-building effort to restore the professional expertise to manage and operate the network and sewage treatment plants.

Although the 2010 AMCOW report does provide for a sound and comprehensive assessment of the factors that support 'development' in the sector delivery path, its overall conclusions are regarded by the author of this paper as overly optimistic.

#### **4.3. Sub-sectors: Rural water and sanitation**

To keep this paper concise, rural water and sanitation – which are not a priority of EKN-Zimbabwe orientation – are not included in the scoping.

### **5. Climate change and water resources**

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<sup>17</sup> African Development Bank (AfDB) (2011). Water resource management, supply and sanitation. Chapter 7 in Infrastructure and Growth in Zimbabwe; An action plan for sustained strong economic growth. African Development Bank Group, 2011.

Zimbabwe depends mainly on surface water resources as due to its geological characteristics it holds relatively low groundwater potential. The country is therefore heavily reliant on regular rains and is vulnerable to climate change. With a semi-arid climate with variable and unpredictable rainfall and low mean annual rainfall, the country's renewable water resources of less than 2 ML/population are very low in comparison with its neighbours Botswana, Zambia and Mozambique (which have 8-10 ML/population)<sup>18</sup>. Zimbabwe's overall climate vulnerability is high and expected to worsen as a consequence of climate change with significant health and economic impacts, while the vulnerability of the natural environment as measured by the Environmental Vulnerability Status is much lower<sup>19</sup>.

## **6. Drinking water sector monitoring**

The sector monitoring in Zimbabwe is one of the areas of profound weakness and in need of address, from both an institutional point of view as well as in terms of HR/organisational capacity. The mandates which were formally in place over the past decades are:

- ZINWA – for monitoring national water resources and recording up-to-date information, and monitoring the other services it provides;
- NCU and EHD (sic) are responsible for monitoring the rural water sector;
- Ministry of Local Government, Rural and Urban Development – for monitoring all services managed by local authorities;
- MOHCW has a role in water quality monitoring.

Sector monitoring and information systems need to be restored and updated, with modern technologies and tools for data management and analysis, and processes such as annual reporting on sector progress, including harmonising national sector inventories and databases with those developed by donors and NGOs.

## **7. Donor environment**

The AfDB<sup>20</sup> lists the main donors in Zimbabwe as the AfDB, European Union (EU), Canada, Denmark, Germany, Netherlands, Norway, Sweden, United Kingdom, United States and the World Bank, as well as UN agencies (UNDP, FAO, UNICEF, UNHCR, WFP and the Global Fund). Most of the support is provided as humanitarian or transitional support which is provided via UN agencies and NGOs rather than government. This includes Australia's contribution of \$US14M through UNICEF for the \$US23M ER&RR program. An estimated \$US760M is estimated to have been disbursed in 2008 and 2009, over half of which was for humanitarian assistance and \$US170M in relation to the cholera epidemic. In order to ensure coordination between donor initiatives, the donor community established a Water Environmental Sanitation Working

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<sup>18</sup> Renewable Freshwater Supply estimates (km<sup>3</sup>/yr) (2006) from Pacific Institute ([www.worldwater.com](http://www.worldwater.com))

<sup>19</sup> 2010 AMCOW Country Status Overview Report

<sup>20</sup> AfDB (2010). *Zimbabwe Country Brief*. The African Development Bank, January 2010. Accessed 12 July 2011, [http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Zimbabwe%20Country%20Brief\\_02.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Zimbabwe%20Country%20Brief_02.pdf).

Group with leadership provided by UNICEF, which also keeps the NAC informed and promotes links with other related working groups.

### **7.1. Finance trends**

Estimating the annual investment requirement for meeting the MDGs is a difficult task, given the

unreliability of coverage figures and difficulties with predicting the resources available to the sector. The 2010 AMCOW CSO report nevertheless developed a funding model to estimate the annual investment required: a total annual capital expenditure of \$US544M and operating expenditure of \$US57M for water supply, and a further \$US415M capital expenditure and \$US24M operating expenditure for sanitation. Assuming public investment for water at \$US93M, with all operating costs and \$US85M of capital expenditure to be met by households, the model estimates a shortfall of \$US365M for required investment for water. Similar assumptions about available funds for sanitation yield an annual shortfall of \$US336M.

Although the AMCO report has provided for a sound overall assessment of the sector, a number of its assumptions are overoptimistic – certainly in the financing trends. These include proceeds from households, since the ability to pay has fallen with the economic collapse and the willingness to pay may remain less than optimal for some time due to poor delivery of services. If there is a shortfall in sector rehabilitation, this will impact achieving or substantially contributing to the MDGs.

Although multilateral lending agencies such as the African Development Bank (AfDB) and IMF are currently not providing any lending to Zimbabwe because of its arrears with the bulk of external debt, grant funding is available through various emergency and relief funds including the Fragile States Facility, the Special Relief Fund and the African Water Facility. Two special funding programs for Zimbabwe have also been created, with the support of international donors and NGOs including AusAID, that prioritise WASH programs: the Emergency Rehabilitation and Risk Reduction (ER&RR) program coordinated by UNICEF, and the Zimbabwe Multi-Donor Trust Fund (the Zim-Fund) administered by the AfDB.

Most of the sector finance is managed by NGOs and multilateral donors, off the national budget, although there is renewed interest from the Inclusive Government to address WASH with a budget allocation of \$US109M to the sector in 2010, an increase of \$74M from 2009. Information about national budgeting on (urban) WASH needs to be explored.

### **8. Acknowledgement of sources**

Besides his personal knowledge of the Zimbabwean water and sanitation sector, the author of this Scoping paper would like to acknowledge that this sector brief draws strongly on the recent AMCOW Country Status Overview as a recent, credible source of information regarding many of the areas covered. Additionally ISF-UTS (2011) *Zimbabwe Water, Sanitation and Hygiene Sector Brief*, prepared for AusAID by the Institute for Sustainable Futures, University of Technology Sydney in October 2011 as well as other documents have been consulted as referred to in the footnotes of this paper.

NWP, 150312  
Wim Klaassen  
Core Advisor Water Yemen

## **Annex 5: Sector Scan Drinking Water sector Zimbabwe**

(Google [sample form only](#)-will be filled on line)

### **Sector Scan Drinking Water sector Zimbabwe**

Due to a declining economy and political crisis, Zimbabwe's infrastructure collapsed with severe socio-economic impacts. These reached their worst level in 2008/9 with the devastating cholera epidemic that took the lives of more than 4,300 people, mostly in the urban and peri-urban areas in the country. Currently water and sanitation infrastructure in the country is functioning sub-standard.

The government of Zimbabwe has presented an official request to the government of the Netherlands for assistance from the Dutch water sector.

To be able to come to a decision whether and how to respond to this request of the Zimbabwean Government we urge you (or a colleague) to fill-out this form as soon as possible. It won't take long to complete the form and you can either answer in English or Dutch.

If additional information is required we will contact you by phone.

Thank you for your cooperation.

Wim Klaassen,

Core Advisor water, NWP,

**What is the name of your organization?**

**Name contact person:**

**Telephone nr contact person:**

**Email address contact person:**

**Does your organization have ongoing activities in the country?**

- ( ) Yes
- ( ) No

**In which area of expertise is your organization running activities in the country?**

- [ ] Flood control
- [ ] Delta technology
- [ ] Water technology
- [ ] Droughts
- [ ] Other:

**If any, please describe your past experience/track record in the country/area?**

Please describe (max 1500 characters)

**Who is financing (or has financed) your operations in the country?**

- Central government
- Local government
- Private sector
- Dutch government
- International Financing Institutions (Wereldbank, Asian Development Bank etc)
- Philanthropic organization
- Other:

**Does your organization have plans to develop activities/business in the country?**

- Yes
- No

**Is your organization currently involved in a tender procedure in the country?**

- Yes
- No

**What is your judgment with regard to the short and long term market opportunities in the country and if possible more specifically for the area that is at stake?**

- Very good
- Good
- Medium
- Few
- None

**Please share some thinking on the market opportunities in the country. (Added value Dutch water sector, financing opportunities, etc) (max 1500 characters)**

**Do you think the deployment of the DRR-Team could support the operations and business plans of your organization in the country/region?**

- Yes
- Maybe
- No

**Please explain how the DRR-Team could support the operations of your organization in the country? (max 1500 characters)**

## Annex 6: Review of service levels Local Government, Zimbabwe<sup>21</sup>

The figures below illustrate the weaknesses; strengths, opportunities and challenges identified during the review of services levels for urban local authorities (2013).

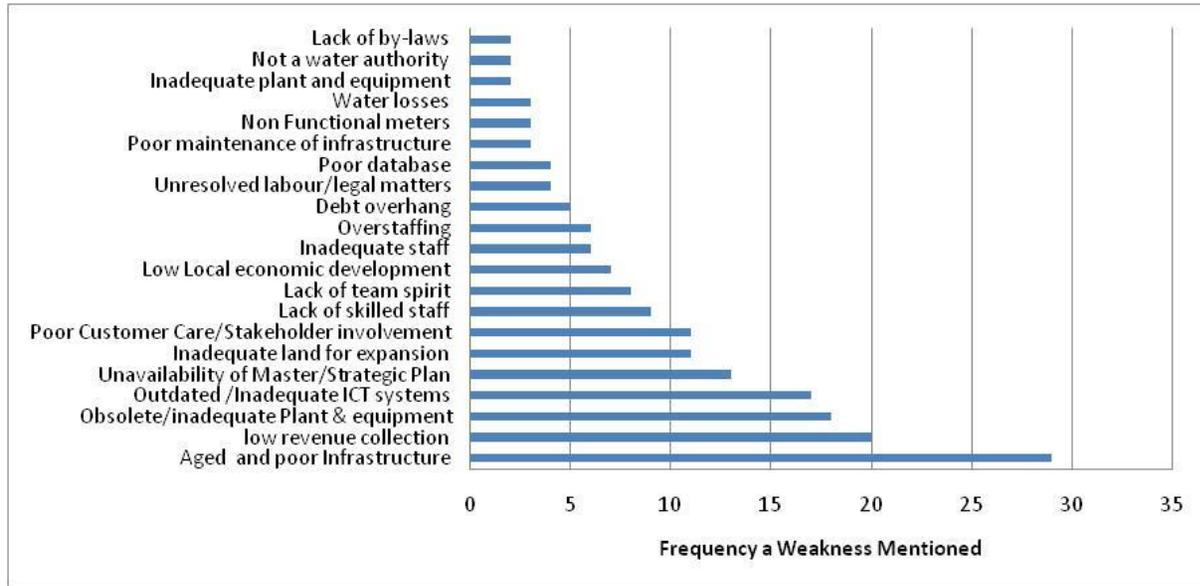


Figure 4.1 Weaknesses affecting most Local Authorities

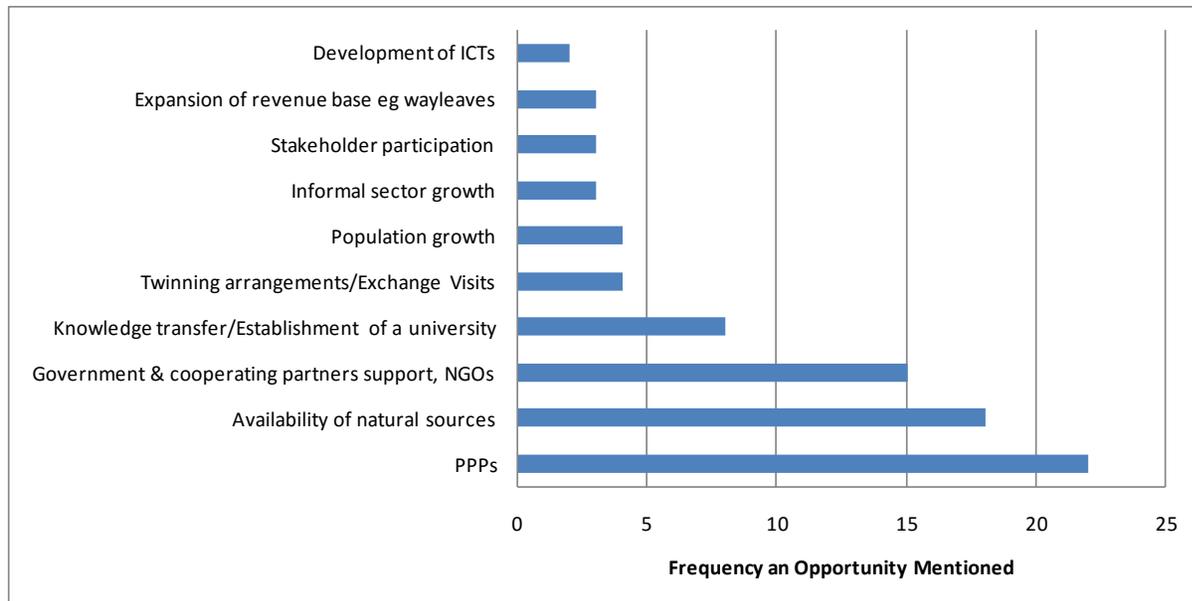


Figure 4.2 Opportunities reported in most Local Authorities

<sup>21</sup> "Service Level Benchmarking for Urban Water Supply, Sanitation and Solid Waste Management in Zimbabwe, Peer Review Annual Report" ,December 2014

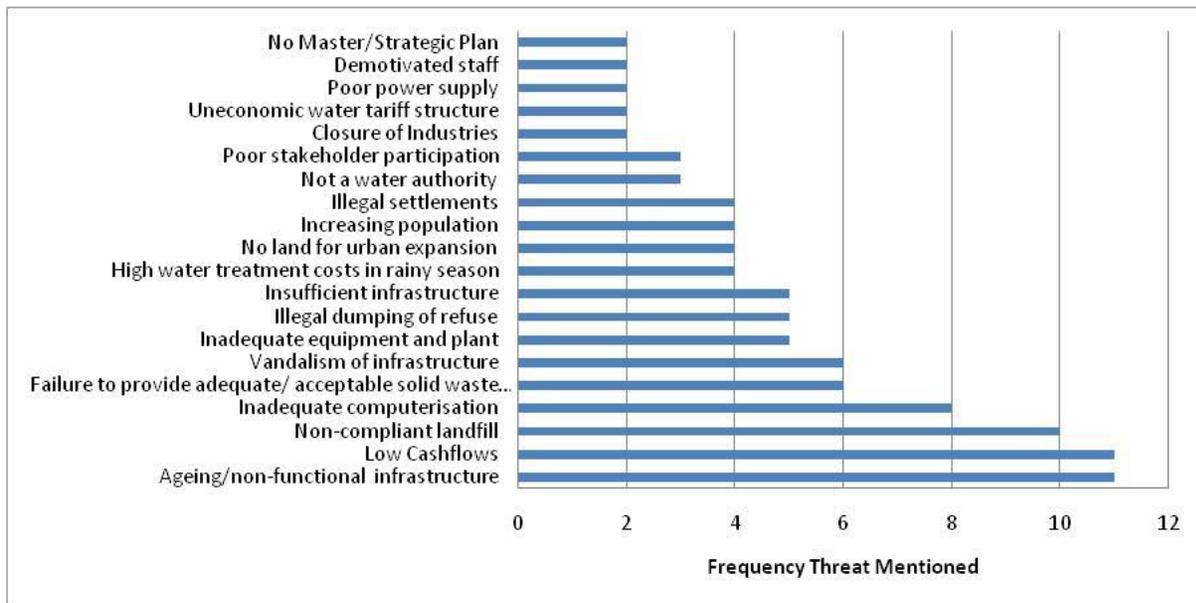


Figure 4.3 Threats reported in most Local Authorities

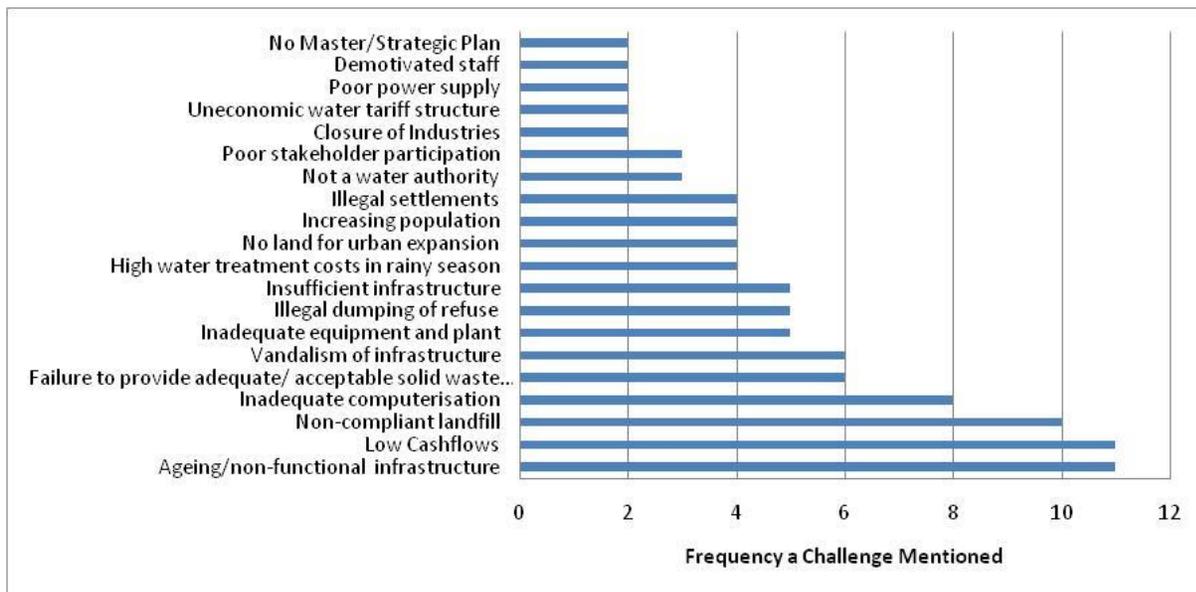


Figure 4.4 Summary of Key Challenges facing most Local Authorities as reported by Peer Reviewers

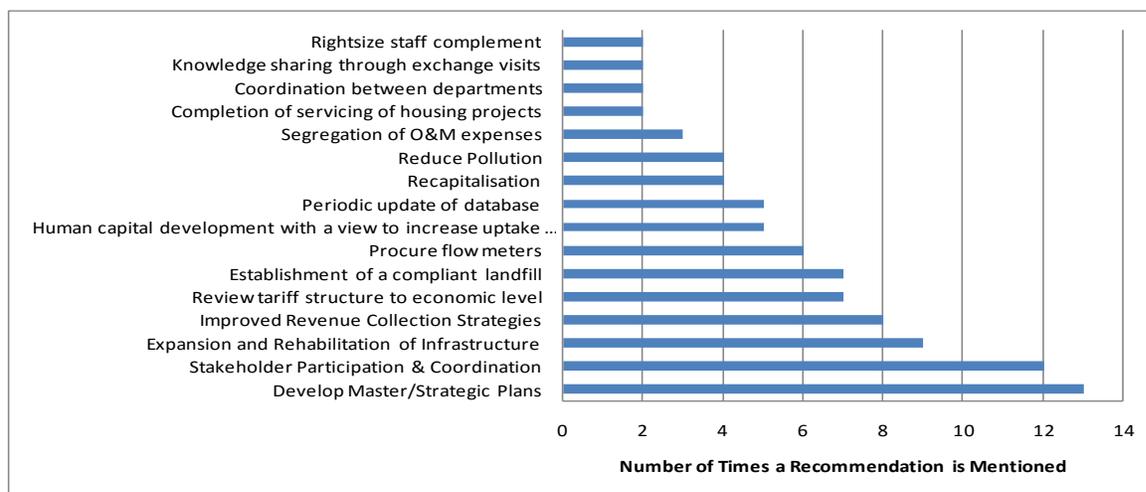


Figure 4.5 Summary of Key Recommendations made by Review Teams on various Local Authorities

## Annex 7: Excerpt from ‘Small Towns and Rural Growth Centers - Water Supply and Sanitation Management Study’

In 2011 the World Bank carried out a study which included 5 stations administered by City Council and 5 station administered by Rural District Councils.

The following points are noted:

1. ZINWA and Local Authorities have different approaches to setting tariffs and getting approvals. ZINWA applies a uniform tariff in all catchments set by Head Office. ZINWA tariffs are generally higher.
2. Revenue collection is high for ZINWA compared to urban local authorities, which may be linked to their capacity to disconnect defaulting customers.
3. Rural Districts Councils were not affected by the 2006 and 2009 government directives. This may explain why relations between ZINWA and Rural District Councils are better compared to those between ZINWA and urban councils.

Main findings reported by the study:

1. Low service coverage of 52 percent to 100 percent, linked to power supply and breakdown of electrical and mechanical equipment.
2. Deterioration of infrastructure due to poor O&M, linked to weak capacity, poor funding, absence of effective maintenance and spare parts policy, and lack of clarity on asset ownership.
3. Weak institutional and management capacity, with key posts vacant and lack of skills required for O&M, lack of training, and poor supervision and oversight.
4. Limited financial capacity of service providers, with low collection efficiency (average 45 percent) reflecting lack of confidence of customers, and old and faulty meters so that bills are based on estimates.
5. Lack of effective regulatory framework, with no clear tariff setting regulations and guidelines.

Other points worth noting in the report:

1. Unaccounted for Water is high, on average 34 percent.
2. The level of faulty meters is high in three stations (from 43 percent to 72 percent), but less than 17 percent in five stations.
3. In some cases new developments did not have services as a result of poor communication between ZINWA and councils.
4. The major problem at abstraction sites is the high breakdown rate of pumps, which has resulted in no standby pumps in 6 of 8 sites.
5. Erratic power supply (4 to 8 hours a day) is a constraint on production.
6. The provision of vehicles or other transport is a problem in most of the stations.
7. Communication services are poor at the stations (telephone, fax, radio or internet).
8. Information management systems are lacking, with a high risk of inaccurate data due to high volumes of data being processed manually, and information such as payments and new connections are not updated quickly.
9. Infrastructure layout and drawings are absent.
10. There is no asset management system.
11. Operational data is not captured in a systematic way.
12. Government departments are taking more than 90 days to settle their water bills, and in some cases represent up to 60 percent of billings.
13. Customer perceptions include complaints about hours of water supply per day, affordability, and slow response to customer complaints.
14. Measures required to restore services include standby power supply, replacement of key equipment such as pumps and meters, water loss reduction strategies, and benchmarking.

Main recommendations made by the report:

1. Maintain and rehabilitate existing infrastructure, based on a phased approach with (i) high priority emergency works to restore services and ensure public health, (ii) long term investment needed to fully rehabilitate and expand services to un-served populations, and (iii) institute a gradual tariff increase to fund operations.
2. Put in place a policy framework to clarify ownership of assets and a financial strategy for small towns and rural areas taking account of limited financial and budgetary capacities of councils, including rationalizing tariffs and approval procedures, replacing meters to improve billing

accuracy, and introducing computerized billing and accounting software, as well as customer care units.

3. Test and adopt alternative management models.
4. In the long term government should consider strengthening (urban) town councils to fully manage services, while ZINWA focuses on rural growth centers.
5. Strengthen the technical capacity of service providers by recruiting staff to fill vacant posts, fill skills gaps, designate senior staff to supervise and provide oversight, formulate performance monitoring systems, and institute competitive delegation of management for senior staff.

These findings and recommendations have been taken into consideration in preparing this report, after filtering the differences noted between ZINWA, rural local authorities, and urban local authorities.

### 6.1.1 Management and HR issues

#### Field observations

The field visits identified a number of issues relating to management and human resources.

The basic staffing arrangement at the station-level including responsibilities is as follows:

- The **Operator-in-Charge** has overall responsibility for the water supply system, for supervising day to day operation and maintenance, and for local resolution of customer complaints; they report to the catchment office (Technical Engineer);
- **Assistant Operators** are responsible for the day to day running of plant and equipment including starting and stopping pumps, filter backwash, changing filter media, inspection, cleaning and repairing sumps and tanks, leak detection and repair, exercising valves, installing new connections, maintenance of water meters, meter reading and billing, and other routine maintenance;
- A **Cashier** is responsible for collecting revenues and maintaining the accounts, as well as the customer database. In some smaller stations, the Operator-in-Charge carries out the role of cashier.
- From the catchment level the **Technical Engineer** provides technical support to the stations, and reports to the **Operations Engineer** who reports to the **Operations Manager**.

The information provided below is based on interviews held with the station-level staff.

1. **Training.** The majority of operators report that regular training is not provided at all. A few could recall that the last training was held some years ago, e.g., in Banket the last training was in 2005, and in Magunje in 2007. Some operators report that they do receive training, e.g., Zimunya facilitated from the catchment office in Mutare; Concession with training at Domboshawa; and Checheche training at Mutare. This may be linked to initiatives taken by the catchment office. In the majority of cases, the expectation is that senior operators and Technical Engineers will impart training to junior staff on the job.
2. **Occupational health and safety.** Basic occupational health and safety measures are followed, and operators are provided with basic essentials such as overalls or jackets and gumboots. The

catchment offices report that equipment such as facemasks and gloves for operators dealing with hazardous substances are provided along with regular health checkups. But the overall picture is that much like the training, the occupational health and safety is no longer addressed in a systematic way.

3. **Bookkeeping.** In terms of records, it seems that this is standardized and includes operational data on clear water production, consumption at tap, lists of assets, pipe bursts, metered connections register, disconnections register, O&M costs, revenue, and visitors. In many stations, these records are kept up to date. Some data such as O&M costs and revenues can only be accessed at the catchment office. However, record keeping ultimately suffers because there is no data analysis and operational decision-making based on the data.
4. **Customer database.** The majority of stations do this manually. However, ZINWA is rolling out a centralized billing and accounting software. Out of the twenty stations visited 8 already have this in place, Birchenough, Centenary, Chipangayi, Concession, Goromonzi, Guruve, Macheke, and Murehwa. These are all larger, well performing stations (with the exception of Guruve which is the largest of all, but in need of restoration).
5. **Transport.** Operators report that lack of transport is one of the biggest challenges that they face. This makes meter reading and billing, leak detection, and field maintenance and repair extremely challenging. Out of 20 stations, only three reported that they have a motorbike in Concession, Morombedzi and Zimunya.
6. **Maintenance management.** Regular routine maintenance does take place, under the supervision of the Operator-in-Charge. However, there is no formal maintenance management program. The basic approach is one of reactive maintenance when a system component or part fails. This means that systems are at high risk of failure for extended periods of time. For example, if a pump or motor fails, with no back up, the system could be down for some days before repairs can take place.
7. **Tools, spares and consumables.** Basic tools are kept at some of the station to carry out routine maintenancesuch as cleaning tanks or basic repairs. Small tools include such things asbrushes, spanners, shovels, and hacksaws, as well as wheelbarrows. Larger tools and equipment have to be brought from the catchment office.Almost no spares or consumables are kept at the stations other than a few nuts and bolts, gaskets, grease, and an assortment of PVC and AC pipes and fittings.
8. **Instrumentation and control** – no proper measurement systems are in place. The provision of bulk meters was standard practice at the time of design and installation, so that raw water transmission, clear water transmission, and distribution mains, as well as house connections, are all metered. Together with a good customer database and billing and revenue data, this would ensure that an accurate water balance be prepared. This is an essential tool for operational management. However, in many cases the bulk meters are no longer functioning.
9. **Chemical dosing.** The original water treatment works were designed with mixing chambers with alum and lime dosing systems. In all cases, these have been abandoned. Likewise, the systems were designed with a chlorine contact tank and chlorinator system. The chlorine contact tanks are still there, but the chlorinators are no longer to be found. Chemical dosing using aluminum

sulphate, soda ash, and chlorine granules (“HTH”) is now done by a rudimentary ‘hole-in-bucket’ method.

10. **Water quality testing.** pH tests, total chlorine tests, and residual chlorine are all tested at station level. A more comprehensive set of tests are done by staff from ZINWA water quality departments. Operators report different frequencies of between one and three months.
11. **Meter reading and billing.** Meter reading and billing is done by station operators. The lack of transport is a major constraint on the efficient use of their time and energy, since operators have to walk large distances.
12. **Payments.** Payments are made to the Cashier at the water treatment works.
13. **Customer complaints.** Local resolution of customer complaints by the Operator-in-Charge. Most complaints concern water bills (how estimates are made). In the field visits, the general impression gained is that the Operator-in-Charge takes this seriously. However, it is clear that a more formal mechanism of registering complaints, responding to and resolving issues, and tracking the status of complaints is required.

#### **Recommendations for training and equipping stations**

Based on these findings, a number of recommendations can be made which need to be considered as part of the restructuring of ZINWA as a water utility.

1. Training programs that were previously a standard practice in ZINWA need to be reestablished. The existing training manual should be reviewed and revised to bring it up-to-date, and a needs assessment carried out to identify and prioritize training topics. This should be followed by an assessment of available resources to carry out the training, including in-house staff. In the preceding discussion, the following topics have been identified to be considered (but this list should not be considered as complete):
  - a. Occupational health and safety
  - b. Operational performance measurement and service level benchmarking
  - c. NRW management and asset maintenance management
  - d. Water quality including sampling and analysis
  - e. Customer relations
  - f. Standard operating procedures (for all water system components)
2. One of the topics for training should be occupational health and safety. In addition, the safety equipment provided to staff should be reviewed and a standard package of clothing and equipment provided to staff, as well as routine health checkups for any staff working with hazardous substances.
3. Every station should be provided with at least one motorbike per station and one bicycle per operator. Larger stations may require more on a needs basis. In addition, each station should be allocated a standard toolbox with essential tools, and a standard stock of essential spares and consumables. Overtime, improved asset management can be linked to stores inventory to ensure that essential items are stocked at the station in advance.

4. Provision of measurement devices such as bulk water meters and pressure gauges should be treated as an immediate need, so that management begin to measure and monitor performance.
5. The current practice of “hole-in-bucket” chemical dosing should be reviewed, and if necessary alternative methods adopted. This can include training, as well as provision of new equipment for alum and lime dosing, and chlorine dosing.
6. Worldwide, household connections are commonly found to account for as much as 50 to 70 percent of NRW. The materials and workmanship for household connections should be reviewed, and improvements instituted as needed. This can include training as well as provision of appropriate tapping tools, and quality control on materials and installation.
7. Improved approaches to customer services and commercial management are urgently required. Having a customer care center in each small town, with staff trained to deal with customers, would be a step in the right direction. Operators should also get training in dealing with customers on a day-to-day basis.

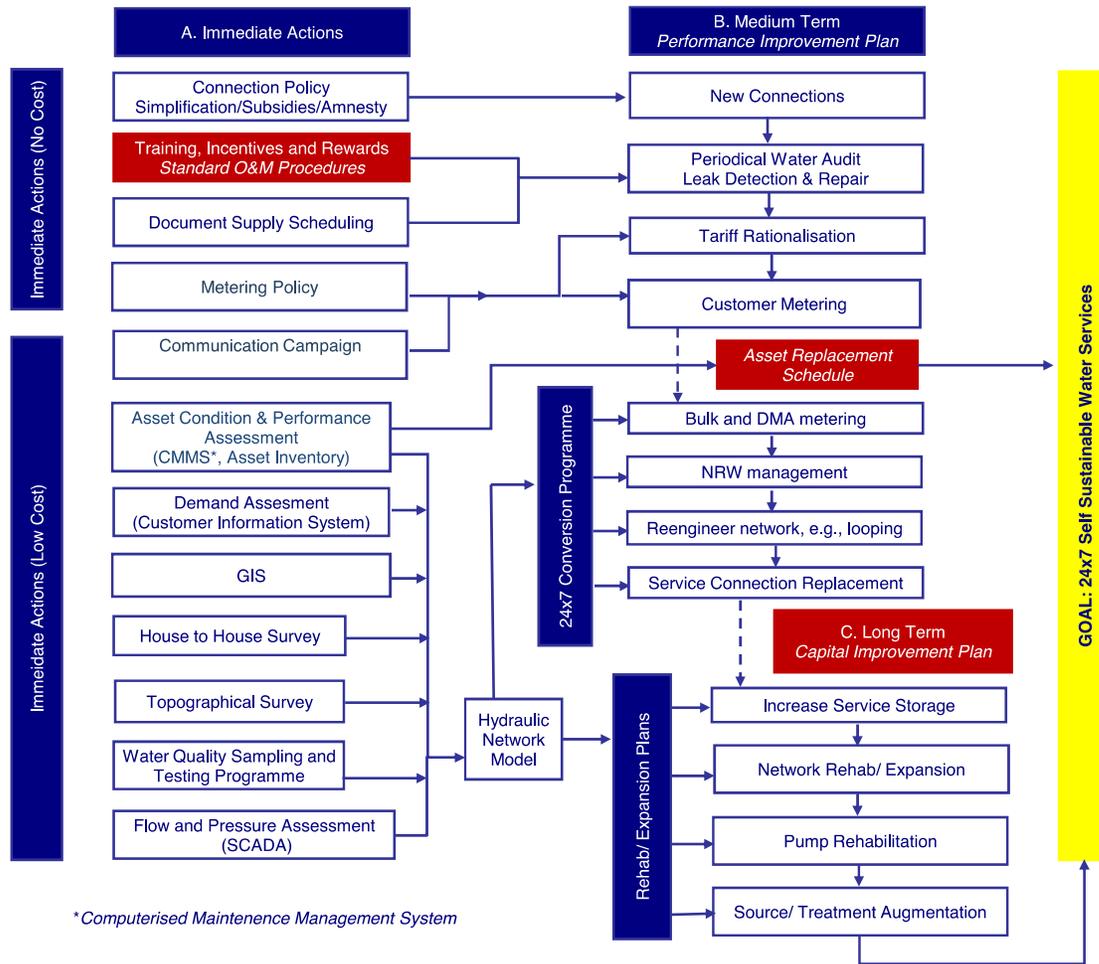
**Table 0.1: Useful Performance Indicators**

Indicator	Definition	Notes	Best practices
<b>Coverage of water supply connections</b>	Total number of households with a connection / total number of households	Includes households in an apartment complex Excludes public standposts, tankers, borewells	<b>Total number of households is based on ground level surveys</b> Data are maintained on existing and new connections
<b>Per capita supply of water</b>	Water supplied to the distribution system / population served	Only treated water should be measured Excludes distribution losses	Measurement is by bulk flow meters at the outlet of the treatment plant <b>Losses are periodically monitored</b>
<b>Extent of metering of water connections</b>	Total number of functional metered water connections / total number of direct water service connections	Includes households in an apartment complex Includes public standpost connections	Databases of water connections and meters are complete, and spatially referenced with a GIS database Meter readings are the basis for generation of water bills <b>There is a mechanism in place to repair meters</b>
<b>Extent of non-revenue water</b>	(water supplied to the distribution system – water sold) / water supplied	Only treated water should be measured Total water sold is volume of water billed	Measurement is by bulk flow meters at the outlet of the treatment plant Metering is undertaken at entry to DMAs and customer connections Billing records and databases are kept up to date
<b>Continuity of water supply</b>	Average number of hours of	Water pressure should be at least 7 meters at the	The calculation is based on detailed operational records

	pressurized (7 m) water supply per day	ferrule point for the connection Supply should be measured for each operational zone or district metering area for seven days and the average taken to represent that month	as recorded for the operational zone or district metering area <b>Pressure and hours of supply are assessed through statistically valid household sample surveys</b>
<b>Quality of water supplied</b>	The percentage of water samples taken in a month that meet <i>all</i> the specified potable water standards (CPHEEO)	The sampling regime should meet standards and norms Samples should be drawn at both outlet of WTP and customer end	Regular sampling is done at the outlet to the WTP and the customer end Tests include residual chlorine and bacteriological tests <b>A periodic independent audit is carried out</b>
<b>Cost recovery in water supply services</b>	Total operating <i>revenues</i> billed / total operating <i>expenses</i> (per quarter)	Operating expenses include electricity, staff, outsourced operations, bulk water purchased, etc. Operating revenues include taxes/cess/surcharges, user charges, connection charges, sale of bulk water, etc.	The budget heads for water (and sanitation) are clearly separated An accrual based double entry accounting systems is practiced (including accepted accounting standards and manuals) Financial statements are subject to regular audit
<b>Efficiency in collection of water supply-related charges</b>	Revenues <i>collected</i> / revenues <i>billed</i> (in the year)	Revenues collected are for the current year and do not include arrears collected Includes taxes/cess/surcharges, user charges, sale of bulk water, etc.	Billing and collection records are properly maintained

**Figure 6.1: Outline of a water supply sub-sector strategy**

*Water Supply Sub-Sector Strategy  
Jalakam & Pilgrim, 2011*



Source: A. Jalakam and N. Pilgrim, 2011.

## **Annex 8: Requirement and cost estimate of Harare city water treatment**

### **HARARE WATER TREATMENT CHEMICALS**

APPENDIX I

<b>CHEMICAL</b>	<b>MONTHLY CONSUMPTION (KG)</b>	<b>COSTS (US\$/KG)</b>	<b>TOTAL COST (US\$)</b>	<b>SOURCE</b>
Liquid Aluminium Sulphate	4,900,000	0.19	912,870	Local / Imported
Grannular Aluminium sulphate	130,000	0.43	56,362	Local / Imported
Chlorine Gas	45,000	0.72	32,418	Imported
Calcium Hypochloride (HTH)	28,000	2.49	69,667	Imported
Powdered activated Carbon	250,000	1.49	372,500	Imported
White Hydrated Lime	250,000	0.36	89,475	Imported
Ammonia	4,000	0.44	1,753	Local
Bulk Sulphuric Acid	150,000	0.49	72,795	Local
Packed Sulphuric Acid	5,000	0.54	2,718	Local
Sodium Silicate	36,000	0.29	10,474	Local
Suid Floc 3870	360,000	2.70	972,000	
Algae Kill/ Ecol2000	120,000	2.22	266,620	Imported
<b>Total</b>			<b>2,859,651</b>	

**Harare Chitungwiza Norton Ruwa Epworth**

## Annex 9: ZINWA clear and raw water metering requirements

### ZINWA CLEAR AND RAW WATER METER REQUIREMENTS

METER SIZE (mm)	MANYAME No.	GWAYI No.	SAVE No.	RUNDE No.	MAZOWE No.	SANYATI No.	MZINGWANE No.	TOTAL No.
15	5000	6000	4500	4400	8000	6000	4000	37900
20	100	617	100	1200	1000	200	300	3517
25	18	37	0	1000	50	4	9	1118
40	4	11	10	150	60	10	9	254
50	100	85	50	180	200	70	120	805
80	8	8	10	90	3	6	3	128
100	60	50	40	90	120	110	95	565
150	75	60	40	80	110	120	50	535
200	10	12	17	27	40	20	30	156
250	20	24	21	3	17	5	12	102
300	15	10	24	18	13	11	16	107

**Note**

HF : Capable of handling high consistent flows (narrow velocity range)

HL : Capable of handling variable flow velocities

Apr-07

## Annex 10: Cost estimate of pipes & related hardware for Small Towns

### PVC PIPES

ZINWA & SMALL TOWNS

Pipe Size (mm)	Class	Quantity (m)	Price US\$/m	Amount US\$
63	6	1,000,000.00	2.00	2,000,000.00
63	10	1,000,000.00	2.50	2,500,000.00
63	12	1,000,000.00	2.80	2,800,000.00
75	6	1,000,000.00	2.60	2,600,000.00
75	10	1,000,000.00	4.00	4,000,000.00
75	12	1,000,000.00	4.80	4,800,000.00
90	6	1,500,000.00	3.60	5,400,000.00
90	10	1,500,000.00	5.70	8,550,000.00
90	12	1,500,000.00	6.60	9,900,000.00
90	16	1,500,000.00	7.00	10,500,000.00
110	6	1,500,000.00	4.70	7,050,000.00
110	10	1,500,000.00	6.90	10,350,000.00
110	12	1,500,000.00	7.90	11,850,000.00
110	16	500,000.00	11.00	5,500,000.00
160	6	1,000,000.00	9.00	9,000,000.00
160	10	1,000,000.00	14.00	14,000,000.00
160	12	1,000,000.00	17.30	17,300,000.00
160	16	500,000.00	24.00	12,000,000.00
200	6	1,000,000.00	14.40	14,400,000.00
200	10	1,000,000.00	24.00	24,000,000.00
200	12	1,000,000.00	28.30	28,300,000.00
200	16	800,000.00	35.00	28,000,000.00

234,800,000.00

# Annex 11: Equipment required for water quality control and monitoring

## Equipment Requirements for Quality Assurance

Equipment type	H/ Office	Gwayi	Manyame	Sanyati	Mazowe	Runde	Save	Mzingwane	Total
Analytical digital balance	1	1	1	1	1	1	1	1	8
6 Place Portable Flocculators	1	11	11	11	11	11	11	11	78
Portable Photometer	1	1	1	1	1	1	1	1	8
Portable pH meter	1	1	1	1	1	1	1	1	8
Portable Spectrophotometer	1	1	1	1	1	1	1	1	8
Portable Turbidity meter	1	11	11	11	11	11	11	11	78
Portable TDS meter	1	1	1	1	1	1	1	1	8
Portable DO meter	1	1	1	1	1	1	1	1	8
Conductivity meter	1	1	1	1	1	1	1	1	8
Stirring rods	2	22	22	22	22	22	22	22	156
Paqaulab Bacteriological Kits	1	1	1	1	1	1	1	1	8
5l vertical Autoclave	1	1	1	1	1	1	1	1	8
<b>Bacteriological reagents</b>									
500g Membrane Lauryl Sulphate Broth	1	1	1	1	1	1	1	1	8
Box Filter papers and filter pads	5	5	5	5	5	5	5	5	40
Depth sampler	1	1	1	1	1	1	1	1	8
500ml bacteriological sampling bottles	20	20	20	20	20	20	20	20	160
2 litre plastic bottles	150	15	150	150	150	150	150	150	1065
Box Latex gloves	2	2	2	2	2	2	2	2	16
Cooler box 20l	2	2	2	2	2	2	2	2	16
Labels	1000	1000	1000	1000	1000	1000	1000	1000	8000
Droppers	10	10	10	10	10	10	10	10	80
1ml graduated pipettes	5	5	5	5	5	5	5	5	40
2ml graduated pipettes	5	5	5	5	5	5	5	5	40
10ml graduated pipettes	5	5	5	5	5	5	5	5	40
<b>Measuring plastic and glass cylinders</b>									
50ml glass cylinders	3	3	3	3	3	3	3	3	24
100ml glass cylinders	3	3	3	3	3	3	3	3	24
250ml glass cylinders	3	3	3	3	3	3	3	3	24
50ml plastic cylinders	3	50	50	50	50	50	50	50	353
100ml plastic cylinders	3	50	50	50	50	50	50	50	353
250ml plastic cylinders	3	50	50	50	50	50	50	50	353
100ml glass beakers	3	50	50	50	50	50	50	50	353
500ml glass beakers	3	50	50	50	50	50	50	50	353
1000ml Glass Beakers	1	11	11	11	11	11	11	11	78
500ml Volumetric Flasks	2	22	22	22	22	22	22	22	156
Pipette fillers	1	11	11	11	11	11	11	11	78
Burettes	2	2	2	2	2	2	2	2	16
<b>Comparator set</b>									
Lovibond Comparator sets	10	10	10	10	10	10	10	10	80
DPD tablets 1&3									
Bromothymol Blue/phenol red indicators									
10ml glass cuvetts	1	11	11	11	11	11	11	11	78
250ml Conical flasks	3	3	3	3	3	3	3	3	24

Also include dosing bins as a stop gap measure when chemofeeder are down.

As discussed I have compiled for Technician mobile lab per catchment, head office and for 10 stations per catchment.