



Urban water conundrums in Zimbabwe – the role of water policy and its implementation gaps

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ABSTRACT

Zimbabwe's urban areas are experiencing a dearth of water services, which is epitomized by acute water shortages and high morbidity due to waterborne diseases. The possible contribution of failures of water policy implementation to this state of affairs is explored. This review identifies and assesses 122 studies in Zimbabwe and in other countries that have analyzed water policies, in order to understand the factors which create gaps in policy implementation. It was found that these implementation gaps are mainly a result of capacity limitations in institutions, finances, and social and technical/human resources. There is currently very limited literature available that analyses water policy in Zimbabwe. In order to overcome the water conundrums in Zimbabwe's urban areas it is recommended that a literature review combined with an empirical study of both qualitative and quantitative gaps between the Zimbabwe National Water Policy and its implementation be undertaken. In particular, the review and study should focus on capacity limitations in institutions, finances, and social and technical/human resources in Zimbabwe.

Key words: implementation gaps, water policy, water supply and sanitation services

HIGHLIGHTS

- More empirical or a combination of empirical studies and literature review should be used to analyze the gaps between the Zimbabwe National Water Policy and its implementation in urban areas.
- Inadequate water supply services are not only because of quantifiable problems but also because of qualitative policy gaps.
- Four capacity factors constrain the implementation of water policy.
- Effective water policy implementation can help to address Zimbabwe's urban water woes.

INTRODUCTION

Data from the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), which has reported country, regional and global estimates of progress on drinking water, sanitation and hygiene (WASH) since 1990, shows that in many countries the provision of adequate water supply and sanitation (WSS) services is a major challenge (WHO/UNICEF 2019). In developing countries and emerging economies worldwide, water use has been increasing by 1% annually since the 1980s (WHO/UNICEF 2019). The Organization for Economic Cooperation and Development (OECD 2012) forecast that by 2050, water demand will have increased by 55% since the year 2000. This is caused by a plethora of factors such as population growth, socio-economic development and changing water consumption patterns under a changing climate as shown in the United Nations Education, Scientific and Cultural Organization–World Water Assessment Programme UNESCO-WWAP (2019) and Romano & Akhmouch (2019).

The OECD (2016) also indicates that in some rural and peri-urban areas of Mexico, Greece, Italy, and Portugal, a proportion of the population is not connected to water systems or has irregular access to water due to water scarcity. The provision of WSS services worldwide is failing to keep pace with rising demand. Consequently, a growing number of people are not getting sufficient water to satisfy their basic personal and domestic needs because water supply is intermittent.

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The Committee on Economic, Social and Cultural Rights (CESCR 2003) and Bos *et al.* (2016) indicate that water supply needs to be available continuously in sufficient amount to meet the requirements of drinking and personal hygiene, cooking and food preparation as well as for washing dishes and laundry. However, many studies show that the universal coverage, quality and sustainability of these services is one of the major challenges of the 21st century, especially in developing countries (Castro & Heller 2009; Ménard *et al.* 2017). The World Water Council (WWC 2000) further indicates that the water crisis which is being experienced worldwide is not as a result of having too little water to satisfy our needs but rather it is a crisis of managing water effectively which is leaving billions of people without sufficient supply. EUWATER NETWORK (2005), UNESCO-WWAP (2006), OECD (2011, 2016), Chigudu (2015) and Romano & Akhmouch (2019) are all of the view that the global water crisis, including the crisis of water supply and sanitation (WSS) services, is primarily a crisis of governance.

WSS programmes are informed by policy and legislations that guide, control and regulate how services should be provided (OECD 2011; Ministry of Water Resources Development and Management (MWRDM) 2012). Ménard *et al.* (2017) conclude that the past two decades have seen major water policy and supportive institutional reforms in both developing and developed countries which aim to improve the delivery of WSS services. These policy reforms are supported by bilateral and multilateral agencies in developing countries and include, among others, devolution (decentralization) of services and functions to local government, increased room for more stakeholders in the water sector and formation of independent regulatory bodies (Ménard *et al.* 2017; Marumahoko *et al.* 2020). Kalaba (2016) indicates that a policy can take many forms such as a law, regulation, ruling, decision or a combination of these to govern an issue area or problem. Thus, all government actions are supposed to be taken under the instruction of a policy.

A water policy which aims to provide adequate, affordable, quality and sustainable WSS services should include programmes, plans, and regulations. The ineffective implementation of policies and legislation that are aimed at informing programmes for the provision of WSS services (Hanrahan & Dosu 2017) has been also identified as one of the major potential barriers to the realization of the Sustainable Development Goal (SDG) Target 6.1 that calls for universal access to these services by 2030 (WHO/UNICEF 2019). It is increasingly being noted that policy objectives fail to be achieved in practice and this constitutes policy implementation gaps/failures (Brinkerhoff & Crosby 2002; Pretorius 2003; Tom & Munemo 2015; Signé 2017). Carter & Howsam (1998) indicate that even the most brilliant piece of policymaking will fail if implemented inappropriately. Thus, a water policy is indispensable to the provision of quality and sustainable drinking water and sanitation services to communities and it is crucial to identify possible barriers to development and implementation of a water policy. Due to the crucial role played by water policies in the delivery of WSS services, the water sector needs to implement these policies in order to protect people from the adverse consequences of inadequate water services.

The Government of Zimbabwe (GOZ) has undertaken major water sector reform programmes since gaining independence in 1980. The aims of the reforms were to align national water legislations with national goals of redressing the inequitable access to the country's water resources which were embodied in the 1976 Water Act and to embrace the Integrated Water Resources Management (IWRM) principles in line with the Water Act and Zimbabwe National Water Act of 1998. The Water Act of 1998 placed all forms of water under State custodianship, represented by the President. Moreover, water rights were replaced with renewable water permits which eliminated the legal concept of water rights supported by the administrative water allocation system (Nhapi 2009). Thus, the Act sought to establish a more equitable system for the distribution of water, improved stakeholder participation and established the catchment as the basis for the management of water resources (MWRDM 2012). Despite these reforms in the water sector, the urban water sector continues to grapple with severe water shortages (Nhapi 2009; MWRDM 2012; Marumahoko *et al.* 2020). The failure of Zimbabwe's urban WSS service also became world news after a cholera outbreak during 2008–2009 infected 100,000 people and claimed 4,300 lives, most of which occurred in the City of Harare (Tsiko & Togarepi 2012).

The Zimbabwe National Water Authority (ZINWA) was established as a parastatal agency responsible for water resources planning, development and management. Furthermore; its functions include the provision of bulk water supply from state dams as well as potable water to about 500 local authorities and government institutions (MWRDM 2012). In addition, all City/Town Councils, Municipalities and other water service providers operate under the Urban Councils Act (UCA) Chapter 15:29, legislation which complements the Zimbabwe National Water Act of 1998 (Hove & Tirimboi 2011; Marumahoko *et al.* 2020). The UCA relates to the provision of water supply services in urban areas and informs the management of urban water supply (Hove & Tirimboi 2011). However, analysis of the UCA indicates that it lacks adequate regulations for the management of urban water supply services (Hove & Tirimboi 2011; Marumahoko *et al.* 2020). The UCA does not spell out procedures of setting water tariffs, roles and responsibilities of institutions, or the regulation of the water management systems in urban

areas, which are very important policy instruments for the effective delivery of WSS services. Apparently, before 2013, there were no specific Urban Water and Sanitation Acts which clearly stated all the institutional arrangements for urban water services management in Zimbabwe (Watson 2009). Chigonda (2010) argues that the Zimbabwe National Water Act of 1998 is just organization-based legislation which provides guidelines about water catchment management rather than urban water management. Consequently, the lack of clearly stated roles for the ZINWA with regards to urban water management is of major concern (Nhapi 2009). Hove & Tirimboi (2011) indicate that while ZINWA manages urban water services, there is no other organization which regulates ZINWA's operations, which ultimately creates a conflict of interest.

Given these challenges, the GOZ decided to formulate a national water policy. According to MWRDM (2012), the Zimbabwe National Water Policy (ZNWP) which came into force in 2013 resulted from baseline work undertaken by the MWRDM, World Bank (WB) and United Nations Children Education Fund (UNICEF). The ZNWP was formulated with the aims of:

- arresting the continued deterioration of WSS services and infrastructure decay;
- re-establishing the confidence of water users through restoration of affordable services and through information dissemination;
- clarifying institutional responsibilities and accountability;
- restoring and building human resources and institutional capacity;
- re-establishing the financial viability of institutions which depend on the collection of user fees and where necessary providing short-term financial assistance;
- developing a framework to realize sustainable development through a reduction of the burden of disasters on the environment, the poor and the vulnerable; and
- engaging with other key stakeholders in government and the economy as a whole to jointly plan and implement the recovery of WSS services.

Water is considered a social and economic resource that should be of high quality, universally accessible and affordable (Chikozho 2002; MWRDM 2012; Zimbabwe Coalition on Debt and Development (ZIMCODD) 2013; Chirenda *et al.* 2015). However, the effective implementation of the ZNWP is still a daunting task for the GOZ. This review therefore aims to summarize the reported studies on the gaps between water policy and its implementation which specifically focus on the assessment of constraints on effective implementation of the water policies in urban areas to inform the implementation of the Zimbabwe National Water Policy.

MATERIALS AND METHODS

A systematic literature search was conducted using the following terms: Water supply + Challenges + Gaps + Policy + Implementation + Zimbabwe + Other countries worldwide on the PubMed database; Open access journals in JSTOR; Google scholar; Cochrane database and ResearchGate. The first search was performed for Water supply + Challenges + Zimbabwe, the second search was performed for Water supply + Challenges + Other countries + Worldwide, the third search was performed for Water Policy + Implementation + Gaps/Failures + Zimbabwe and the fourth search was performed for Causes + Policy + Gaps/Failures. Keywords used included Gaps/Failures, Water Policy, Policy implementation, Zimbabwe and Other countries worldwide combined.

Studies were selected if they met the following inclusion criteria:

- Studies on water supply challenges in Zimbabwe/other countries worldwide;
- Studies on the ZNWP/gaps between policy and its implementation;
- Studies on quantitative/qualitative analyses of gaps between water policy and its implementation in Zimbabwe or other countries, and
- Studies on factors contributing to policy implementation gaps.

Data extraction

Data extracted from the selected studies included the country where the study was carried out, the study setting, the types of water supply challenges, the gaps between policy and policy implementation in the country, the types of gaps that were identified in each study as well as the methods that were used to identify the gaps.

Statistical analysis

Data was entered in a Microsoft Excel Corporation 2016 spreadsheet and analyzed using descriptive statistics with the data and information presented in the form of tables, charts and graphs showing percentages, count or frequency. Qualitative analyses were undertaken to compare findings on the causes of water supply problems, policy analysis models and types of implementation gaps that were identified.

RESULTS

Summary of studies which met the inclusion criteria

A total of 45,500 studies were obtained from online bibliographic database searches. Studies were selected if they reported on an analysis of public policy, water policy, urban water supply and/or sanitation challenges, the Zimbabwe National Water Policy and/or the gaps between the water policy and its implementation. Out of these studies, only 122 studies met the inclusion criteria which focused on national water policy and gaps between the policy and its implementation, and water supply issues including performance of the water sector and urban water woes: severity of water shortages and deteriorating water quality. Most studies did not meet the inclusion criteria because they reported on analysis of public policies other than water policy such as environmental, agricultural, healthcare, finance and education policies among others. Of the 122 studies that met the inclusion criteria, only 52 studies (42.6%) were conducted in Zimbabwe and 70 studies (57.4%) were conducted in other countries worldwide (representing studies from both developed and developing countries). The results of the analysis of the 52 studies in Zimbabwe and 70 studies beyond Zimbabwe are shown in Table 1. The results show a limited number of studies that used empirical studies or a combination of both empirical and literature review approaches to collate data on water supply issues from both Zimbabwe and other countries worldwide.

Literature results for Zimbabwe

Among the scholars who studied water supply and sanitation topics in Zimbabwe, the following topics were observed (see Figure 1). The results show that only three studies (5.8%) analyzed the water policies or legislation in Zimbabwe in relation to shortages in urban water supplies. Five studies (9.6%) reported on public policies in general with no reference to the water policy, while 6 (11.5%) and 15 (28.9%) studies reported on Integrated Water Resources Management (IWRM) and water governance practices respectively. Most of the Zimbabwe scholars reported on water supply quantity (shortages) and/or quality (waterborne diseases) or on water governance.

Table 1 | Summary of study methods in the selected studies

Study site	Study method			Total
	Empirical	Literature review	Both primary and literature review	
Zimbabwe	5 (9.6%)	43 (82.7%)	4 (7.7%)	52 (100%)
Other countries	17 (24.3%)	47 (67.1%)	6 (8.6%)	70 (100%)
Average	17%	74.9%	8.2%	122 (100%)

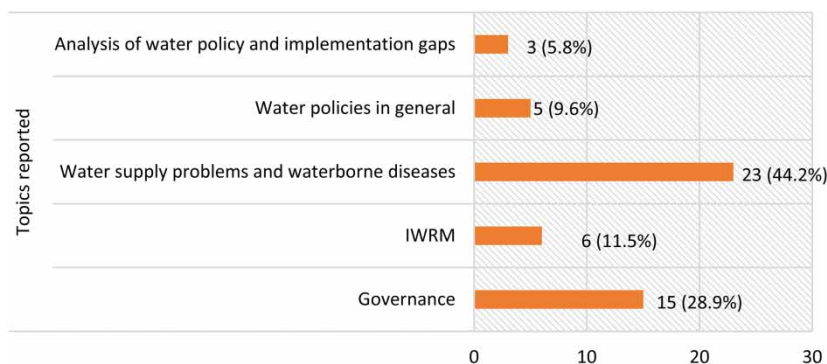


Figure 1 | Topics discussed in WSS publications on Zimbabwe.

The Zimbabwe studies mainly focused on quantifiable/technical aspects of water supply including:

- Inadequate wastewater treatment plants;
- Rapid urbanization;
- Expensive technology;
- Obsolete water supply infrastructure;
- Low water storage capacity;
- Increases in urban populations, and
- Urban agriculture.

In those publications where scholars reported on water policy and implementation of policy (Chigudu 2015), they did not critique the policy formulation or its implementation. However, one study which reported on an analysis of documents (Tom & Munemo 2015) used a public policy approach where they incorporated the formulation and implementation of the ZNWP in an analysis of the gaps between the national water policy and its implementation. The analysis identified a number of qualitative policy implementation gaps between the ZNWP and its implementation, including:

- Policy design flaws and a lack of wide support;
- Existence of unintended beneficiaries of the ZNWP including politicians who fail to pay water bills, the illegal abstraction of surface water and unsanctioned drilling and operation of boreholes in urban areas;
- Lack of predicted consequences during policy design and implementation;
- Conceptual and ideological contests including the rampant politicization of public policies by political parties for political expediency coupled with excessive bureaucratic procedures (top-down policy implementation approaches);
- Lack of empowerment of residents by the ZNWP revealed by poor service delivery;
- Ineffective organizational and human resources;
- Political instability which leads to economic meltdown and donor apathy;
- Lack of accountability in the public sector;
- Corruption;
- Duplication of roles between water institutions;
- Lack of practice of democratic culture including debate, consultation and participation;
- Lack of authority, and
- Lack of continuity in government policies owing to the electoral cycle.

Literature results for countries other than Zimbabwe

The 70 studies in other countries were carried out in Africa (South Africa, Mozambique, Tanzania, Nigeria and Ghana) and non-African countries including Australia, Brazil, Canada, Chile, France, India, Netherlands, Sweden, United Kingdom (UK) and United States of America (USA) and which are predominantly OECD member states as well as other overseas countries which are not OECD countries including: Cambodia, Nepal, Pakistan, Paraguay, Kyrgyzstan, Tajikistan and Uzbekistan. The African countries with reported studies were either contributed case studies to the OECD Water Governance Initiative (WGI) project to inform the development of social and economic policies (OECD 2015) or the studies were sponsored by educational institutions and/or government departments in the respective countries. The numerical breakdown of the water supply and sanitation topics covered by these studies is given in Figure 2.

A significant number of the studies (18 or 25.7%) reported on National Water policy and the gaps between water policy and its implementation including how the gaps affect the provision of water supply and sanitation services in urban areas. A total of 18 studies (25.7%) reported on water governance issues, 13 studies (18.6%) reported on the water supply situation and waterborne diseases in urban areas, 12 studies (17.1%) reported on general water policy issues highlighting national water policies and Acts in management of water while nine studies (12.9%) reported on IWRM (see Figure 2).

Overall, a larger proportion of studies analyzed water policy and its implementation, and water governance, while other water topics such as IWRM, general water policies and legislation, and water supply and waterborne diseases had a lower frequency among the selected reports. The search for the 'policy implementation gap' from various online bibliographic databases produced numerous factors accounting for policy implementation gaps. The literature beyond Zimbabwe identified several common factors that constraint policy implementation as summarized in Table 2. These factors include: inadequate

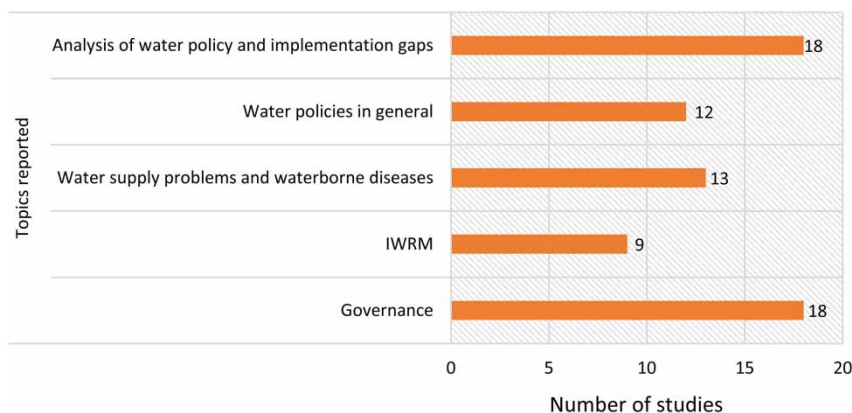


Figure 2 | Topics discussed in WSS publications on other countries.

Table 2 | Causes of implementation gaps

Publication	Causes of implementation gaps
Ménard <i>et al.</i> (2017)	<ul style="list-style-type: none"> • Misalignment between institutional arrangements, incentives and resources mobilized in water policies
Teddy <i>et al.</i> (2019)	<ul style="list-style-type: none"> • Lack of collaboration • Lack of discretionary power • Lack of resources • Lack of governance • Lack of service user experiences
Hudson <i>et al.</i> (2019)	<ul style="list-style-type: none"> • Overly optimistic expectations • Implementation in dispersed government • Inadequate collaborative policy making • Vagaries of the political cycle
Folifac (2007)	<ul style="list-style-type: none"> • Absence of a coherent policy • Absence of institutional framework with established clear responsibilities • Overlapping of institutional boundaries • Lack of political legitimacy and will • Misplacement of available resources • Low level of economic activity
Howlett <i>et al.</i> (2015)	<ul style="list-style-type: none"> • Nature of political system • Governance capacity • Level of uncertainty in knowledge and practice
Ran (2013)	<ul style="list-style-type: none"> • Incentive structure set by central government regarding environmental policy implementation and local levels are perversely structured, central government provides more incentives for local governments' non-implementation or poor implementation • Failure by central government to encourage politically, financially, as well as morally, local government officials to appropriately implement environmental policies
McConnell (2015)	<ul style="list-style-type: none"> • Government: policy-making process failure • Programme failure (e.g. financial subsidies, incentives and penalties, and regulation behaviour) • Political aspect of policies

finances, inadequate human resources, a lack of coordination, inadequate authority and a lack of training among others (Folifac 2007; Timmer *et al.* 2007; Ran 2013; Howlett *et al.* 2015; McConnell 2015; Ménard *et al.* 2017; Minnes & Vodden 2017; Signé 2017; Imonikhe & Moodley 2018; Eledi 2019; Hudson *et al.* 2019; Teddy *et al.* 2019; Jiménez *et al.* 2020).

When all common factors were grouped together, four key factors that hinder the implementation of water policies or policy programmes/objectives were identified. These key factors are financial, institutional, technical/human and social factors.

DISCUSSION

Most of the studies of Zimbabwe provide more information on the technical problems of the water sector, and concomitantly, the solutions offered to eliminate or reduce the rampant urban water woes are technical. Most of these authors recommend that aged water infrastructure be replaced and that water plant spare parts should be purchased among a range of solutions. However, [Romano & Akhmouch \(2019\)](#) argue that, while it is certain that technical solutions have a fundamental role, these measures represent only part of the solution. In order to support technical solutions, cities must ensure that the existing institutional structures are 'fit to fix the pipes', from accessible information to adequate institutional capacity, from sufficient funding to transparency and honesty, and from meaningful stakeholder engagement to coherent policies across sectors.

The outcome of this review indicates that the lack of policy analysis to inform programmes in the provision of these services, including analysis of the ZNWP and its implementation failures, is one of the factors contributing to the perpetual crisis in the provision of WSS services. In contrast, in countries like the UK, the USA and Australia, various studies have been carried out on ways to achieve effective policy implementation in the water sector. Ultimately, most authors argue that policy studies which assess policy and inform policy reform can ensure the attainment of policy objectives ([Brouwer et al. 2013](#)). These studies can establish ways to manage stakeholder interactions ([OECD 2016](#); [Romano & Akhmouch 2019](#)) and define institutional roles as well as developing capacity. In Zimbabwe, such studies are lacking as most studies just narrate the shortage of water in urban areas in a setting where surface water is abundant ([Nhapi 2009](#); [Hove & Tirimboi 2011](#); [Makwara & Tavuyanago 2012](#); [Chaminuka & Nyatsanza 2013](#); [Musingafi 2013](#); [ZIMCODD 2013](#)).

The Zimbabwe studies did not critique the link between potable water shortages and the effectiveness of the ZNWP, the ZINWA Act or the UCA to address these challenges. Instead, the authors just overview these three policies together with other legislation that informs water supply programmes in Zimbabwe ([Nhapi 2009](#); [MWRDM 2012](#); [World Bank 2013](#); [Muzondi 2014](#); [Musingafi et al. 2015](#)), and do not discuss their efficacy in the provision of water services in urban areas. Furthermore, policy analysts argue that merely identifying that water supply problems exist, without assessing the effectiveness of these policies in the provision of these services, is of limited use ([Tom & Munemo 2015](#)). Therefore, the interaction between policy making and implementation is a very important aspect of policy analysis because some gaps that are created in policy making can have ramifications for the implementation phase ([Brinkerhoff & Crosby 2002](#); [Pretorius 2003](#)).

[Tom & Munemo \(2015\)](#) argue that reporting on IWRM is important because IWRM principles also inform water supply programmes in Zimbabwe. However, these principles need to be translated into practice for them to benefit the water supply sector. These scholars further argue that 'merely showing the audience that water problems exist in Zimbabwe's urban areas and that their solution lies in the implementation of legislative reforms' does not help to eradicate these water woes. Instead, a sound policy analysis should identify the types of policy implementation failures (gaps), their sources/causes and appropriate practical solutions to reduce or eradicate them ([Tom & Munemo 2015](#); [Ménard et al. 2017](#)). Corruption, inadequate accountability, overlapping institutional roles and lack of a democratic culture are all manifestations of gaps in policy implementation. Discussing these challenges without relating them to policy implementation gaps will create discord ([Brinkerhoff & Crosby 2002](#); [Pretorius 2003](#); [Tom & Munemo 2015](#)). Furthermore, most of what ZIMCODD described in 2013, namely, a lack of knowledge, gender imbalance, lack of transparency and corruption among others, are results of water policy implementation gaps. However, these authors did not critique the policy or its implementation.

The review undertaken by [Tom & Munemo \(2015\)](#) used a public policy approach to analyze the ZNWP and its implementation and to identify many policy implementation gaps. This analysis is plausible and unique to the Zimbabwe literature because the identified implementation gaps influence the provision of WSS services. However, the study lacks empirical evidence.

The paucity of literature in Zimbabwe on analyses of the water policy as a means to understand the causes of urban water conundrums warrants empirical studies to identify the gaps between the ZNWP and its implementation and their causes. Relying on literature reviews and analyses of other documents alone creates limitations because the researcher may not always be able to detect or control biases in secondary data sources ([Tom & Munemo 2015](#)).

The Southern African Development Community (SADC) shows a similar pattern of reported studies as discussed for Zimbabwe. Less than four studies were carried out to assess water policy and its implementation gaps, and the possible solutions to ensure effective water policy implementation. In countries where these studies were carried out, their water utilities are amongst the best-performing utilities in the SADC region. This corroborates the view expressed by [Brinkerhoff et al. \(2012\)](#) that 'delivering on policies to improve services can pay a double dividend in fragile states of enhancing the well-being of citizens as well as gain state legitimacy'.

Two studies in South Africa by Folifac (2007) and Maphela & Cloete (2020) indicate that there are gaps between the national water policies and water services in most African countries which constrain the provision of WSS services. Both studies used mixed methods to collate data. The study by Folifac (2007) explored the lessons of good practices from South Africa and the opportunity to implement these practices to significantly reduce or eliminate the gaps between water policies and services in other countries. In addition, the study indicates that both a political will and a policy framework are essential to achieve policy goals. Top-level political will and support was demonstrated by the substantive budget committed by the Department of Water Affairs (DWA) to implement projects. This led to the successful implementation of the South Africa National Water Act (NWA, Act 36 of 1998). The commitment to enact policies by the South African Government was identified as the first step needed to ensure the successful implementation of the NWA. Furthermore, the South Africa Water Service Policy of 1994 (WSP) established an enabling environment by clearly articulating the roles and responsibilities of different levels of government. It can be argued that the South African government made sure that a fit-for-purpose institutional framework was in place through which rules and norms are defined, implemented and operationalized. The study also indicated that defining roles is important because it imparts a sense of responsibility and creates meaningful linkages when implementing the policy.

The OECD (2011, 2015) argues that creating institutional devices that allow the inclusion of sub-national governments, private and community stakeholders and making room for these 'voices' in the policy-making process is a necessary condition to create realistic and implementable policies. The institutional framework identified Non-Governmental Organizations (NGOs) as essential stakeholders whose resources can be harnessed to foster policy implementation. In the case of South Africa, the government provided overwhelming support by channelling financial resources towards construction of basic infrastructure, training of communities to undertake governance, administration, operation and maintenance of water services, and these finances were channelled through the DWA (Folifac 2007).

In South Africa the NWA moved from paper into practice through the creation of Catchment Management Agencies (CMAs) and Water User Associations as stipulated by the NWA. An international partnership, the National Water and Sanitation Programme (NWSP) was also created to assist the poor to gain access to WSS services and government funding was provided from 1994 to 2002 to DWA and the private sector. This programme led to the construction of water and sanitation services that cover 7 million people, which is all regarded as real action. The right to water was also enacted in the South African National Constitution (a formal institution which provides the framework for all other legislation, rules and regulations) to redress past racial discrimination (Folifac 2007; Ménard *et al.* 2017; Maphela & Cloete 2020). Most of the policy gaps which are identified come from flaws in these macro-institutions, for instance, 'badly defined property rights can introduce loopholes in procedures of implementation, opening room for opportunistic behaviour all the way up to bribery and corruption' (Ménard *et al.* 2017).

Studies elsewhere in the rest of Africa include studies in Ghana (Monney & Ocloo 2017), Tanzania (Mcheka 2015) and Nigeria (Imonikhe & Moodley 2018; Obeta 2018). In Ghana the study by Monney & Ocloo (2017) did not target water policy implementation but mainly focused on policy design, cross-cutting policy issues and country-specific water policy issues including transboundary water management issues. The study did not analyse the extent to which policy objectives are being met by assessing the provision of WSS services. Conversely, the study in a rural setting in Tanzania described by Mcheka (2015) identified the reasons why water can be available but not accessible to domestic users within 400 m as stipulated by the policy. The study analyzed the qualitative aspects of WSS service provision (policy issues) that constrain water accessibility. One factor which was identified by the study was a lack of community involvement from the initial stage of water provision which was unable to draw on local knowledge and experience to formulate relevant local solutions. The study analyzed financial, human and technical capacities, and the implementation of participatory instruments of the Tanzanian water policy of 2002 including sensitization (awareness campaigns), training on water uses and source water protection to educate communities on water protection and sustainability.

In Nigeria, studies by Imonikhe & Moodley (2018) and Obeta (2018) assessed the challenges of effective policy implementation in state water authorities. These studies specifically targeted water policy implementation challenges and they used both literature reviews and empirical studies (interviews and focus group discussions). The studies identified funding, incomplete devolution of powers, population growth and rapid urbanization, a dearth and inadequacy of infrastructure, illegal connections and vandalism as the key factors that constrain Nigerian state water authorities from implementing effective policy. As a result, without complete devolution, local governments do not have the powers to make effective decisions regarding staff, the management of infrastructure or financial expenditures. Autonomy (devolution) and capacity building can make it easier for utilities to deliver water policies and plans by not requiring them to seek approval from a central

government (Imonikhe & Moodley 2018). Hence, devolution allows utilities not only to develop tactical plans, business cases and project proposals but also to implement projects to improve WSS services in a timely manner.

Overall, the analysis of the Zimbabwe literature supports the assertion by Tom & Munemo (2015) that the interactive relationship between policy formulation and its implementation is largely missing in the literature on the Zimbabwe water sector. Only a few studies have merged the formulation and implementation of the Zimbabwean Water Policy into an analysis of the gaps between the policy and its implementation as possible causes of water shortages in urban areas. Most of the Zimbabwe scholars including Nhapi (2009), Makwara & Tavuyanago (2012) and Musingafi (2013) did not critique the implementation of the Water Policy. However, the review by Tom & Munemo (2015) did contribute a new perspective to the Zimbabwe literature on the causes of critical water shortages in urban areas. They showed that policy analysts should analyze gaps in policy and that technical solutions may not be the only response to urban water conundrums, since these problems exist even when the best technology is available. A broader and deeper analysis is missing in most of the literature, as exemplified by the Zimbabwean literature. Hence, policy analysis is of utmost importance when overcoming problems in the provision of WSS services.

Analysis of the literature beyond Africa firmly suggests that in many countries there is a very big gap between what is stated in the law and policy, and what is happening in practice. There is a consensus among these studies that implementation gaps are a result of the mis-alignment of institutional arrangements, incentives and resources devoted to policy implementation. These studies identify that the factors that constrain policy implementation are 'capacity limitations' which can affect policy implementation directly or indirectly (Timmer *et al.* 2007). According to Rawlyk & Patrick (2013), capacity is 'the ability, or capability, of a local community; local authority and water service providers to meet regulations, policies or standards that have been established.' Therefore, the ability of institutions with mandated responsibilities for provision of water services to actively and effectively implement policy programmes constitutes capacity. When meeting best-practice requirements, deficient local capacity can lead to misguided decisions by local authorities including setting low tariffs for urban water utilities and insufficient testing of water (Baietti *et al.* 2006; Morgan 2006).

Elements of capacity for water policy programmes

Ménard *et al.* (2017) argue that the adoption of national water policies and laws should not be an end, instead it is just the start of a longer process that requires much more than formal changes; it includes substantial investments and dedication of financial, social and political capital and establishing human capabilities. Thus, effective implementation of water policies by municipalities, water utilities, city councils, local governments or any other institution mandated with the provision of WSS services requires financial, technical, institutional and social/political capacity (OECD 2011; Howlett *et al.* 2015; Ménard *et al.* 2017; Minnes & Vodden 2017; Eledi 2019; Romano & Akhmouch 2019). Minnes & Vodden (2017), identify four capacity elements that constrain the implementation of water policy including institutional, financial, and social and technical/human capacities as set out in Table 3. Christensen (2011) indicates that, overall, the major risks to WSS services emanate from gaps or deficiencies in the frontlines of drinking water such as laws, programs, policies and personnel mandated with delivering safe drinking water.

Institutional capacity

Ivey *et al.* (2006) and Ménard *et al.* (2017) describe institutional capacity as the existence of suitable institutions (macro, micro and intermediate or meso-scale), policies, legislation and by-laws that support water policy programmes. Macro-institutions were identified as the parliament and/or judiciary in democratic systems and are configurational in function as they define norms, rules and responsibilities (Ostrom 2014). Micro-institutions include water operators, water cooperatives, NGOs and various users (Gibbons & Roberts 2013). According to Ménard *et al.* (2017), meso-institutions are the link between macro- and micro-institutions and are called regulators. The regulatory agencies can take the form of ministerial departments in charge of the water sector (typically a department of public works), local authorities responsible for the organization of the sector when water management is decentralized, self-organized local communities monitoring the resource, etc. (OECD 2015). It is argued that regulators are crucial in policy implementation because they interpret, implement, monitor and control the general rules and rights. Ménard *et al.* (2017) strongly argue that many policy gaps identified in the literature come from flaws in the design of these meso-institutions or in responsibilities they are allocated.

The inability of regulators to operate both ways when bridging the gap between macro- and micro-institutions by facilitating the implementation of policies (top down) and channelling information about the social demand of users (bottom up) creates implementation gaps (Ménard *et al.* 2017). Furthermore, lack of capacity to adapt the general rules to specific situations in

Table 3 | Elements of capacity for source water protection policy (Minnes & Vodden 2017)

Element	Definitions and indicators
Institutional	<p>The legislation, regulations, policies, protocols, governance arrangements and delegation of responsibility to plan and enact SWP policies.</p> <p><u>Example indicators include:</u></p> <ul style="list-style-type: none"> • Provincial legislation and policies provide guidance for drinking water protection at the local level • Municipal planning strategies and by-laws protect current drinking water supplies • Land use activities are controlled in municipal well field, recharge and watershed water supply areas • Land has been purchased for the protection of current municipal water supplies • Plans have been developed to guide municipal actions during water quality emergencies • All responsible for SWP know their responsibilities for implementation and enforcement • Institutional arrangements for land and water management are integrated • Local land use planning supports SWP at a watershed or regional level
Financial	<p>The ability to acquire adequate funds to pay for SWP efforts as well as for ongoing planning, governance and management efforts.</p> <p><u>Example indicators include:</u></p> <ul style="list-style-type: none"> • Organizations responsible for protecting source water supplies are able to maintain a balanced budget • Organizations responsible for protecting source water supplies are able to obtain funding from outside sources • Water rates for customers reflect the full cost of protecting and providing municipal drinking water (including treatment, distribution, maintenance, and SWP) • Funding is available for municipal SWP projects • Financial mechanisms are used to reduce water use (e.g., water rates charged by municipal water utility are used to reduce water consumption)
Social	<p>The social factors that influence SWP governance and implementation. This includes social norms (e.g., values, attitudes, behaviours, sense of place, trust, reciprocity, commitment and motivation) that impact public awareness, stakeholder involvement, community support, and public and private partnerships in SWP efforts. This also incorporates structural networks, communications and the relationships between different groups' interests and actors.</p> <p><u>Example indicators include:</u></p> <ul style="list-style-type: none"> • Clear leadership for water quality protection at the watershed level exists • Active linkages between municipality and provincial agencies exist (vertical linkages) • Active linkages among watershed municipalities exist (horizontal linkages) • Active linkages between municipality and relevant community organizations exist (horizontal linkages) • Community awareness and support for watershed protection
Technical/ Human	<p>The physical and operational ability of an organization to perform SWP management and operations adequately. In addition, having the human resources, with adequate knowledge, skills and experience to properly create source protection plans and implement needed measures.</p> <p><u>Examples of indicators include organizations responsible for protecting source water supplies that have:</u></p> <ul style="list-style-type: none"> • Employees dedicated to water management • Access to individuals with the necessary skills and training to manage drinking water • Education and training opportunities available to staff members and decision makers • Access to individuals with the expertise needed to undertake technical activities related to drinking water quality • Access to the data needed to manage water supplies, delineate watersheds and aquifers, and develop source protection plans in the case of SWP policy

Each of these four capacity elements are discussed in the text.

time, space and scope can achieve unequal outcomes. For example, there is a huge difference between monitoring operator(s) in a city and achieving the same expectations in a remote village, despite both communities being covered under the same general laws. Similarly, rules regarding tariffs may be misaligned with users' income in a specific region, and therefore are bound to fail if suitable meso-institutions are unable to adapt.

The review of policies and practices in Zimbabwe and Africa has indicated that the commitment to enact clear policies is indispensable and that in order for a policy to be implemented, a clear policy is the first crucial step. Without a clear policy, water projects cannot be initiated (Folifac 2007; Ménard *et al.* 2017). The constitution of a country was described earlier as a macro-institution which provides a framework for all other legislation and rules and regulations. The lessons drawn from

South Africa on the role of political commitment affirm the assertion by [Cerna \(2013\)](#) that policies, legislation, and by-laws are indispensable for successful implementation of policies. It was argued that flaws in macro-institutions can introduce loopholes in implementation procedures which can create an enabling environment for opportunistic behaviour, bribery and corruption to flourish. For example, [de Albuquerque \(2010\)](#) considers that the lack of a political will by the UN Member States to formulate policies to enshrine human rights to water and sanitation is a human rights policy failure.

Financial capacity

Many scholars concur with the view that water utilities in developing countries and in small towns and municipalities or small communities in developed countries are challenged by limited financial resources, caused by low efficiency and subsidized tariffs, and shrinking and aging populations ([Timmer *et al.* 2007](#); [Eledi 2019](#)). [WHO \(2019\)](#) considers that weak systems and funding gaps jeopardize the provision of WSS services in the world's poorest countries. [Eledi \(2019\)](#) argues that the level of spending on water policy and implementation by a water institution influences the institution's ability to invest in expensive technical programs such as monitoring or the undertaking of technical studies. For example, a Source Water Protection (SWP) policy needs to be able to support assessments of the vulnerabilities of water supply to contamination and the effectiveness of the protection strategy. These views affirm findings by [Imonikhe & Moodley \(2018\)](#) that Nigerian state utilities were seriously affected by inadequate finances due to low tariffs and non-payment of water bills. These examples indicate that the quest for solutions to urban water crisis does not solely depend on technological solutions, instead, qualitative gaps like lack of funding are also important factors. [Morris \(2017\)](#) indicates that there is a need for utilities to have the capacity to transform financial resources into worthwhile projects and ventures. Thus, funding is a key driver of the achievement of micro-level water policies like water treatment, increasing human capacity, data management, infrastructure provision and maintenance.

Social capacity

The 1992 Rio Earth Summit endorsed Local Agenda 21, which emphasizes the need for people from all sections of the community to take joint responsibility for the decision-making process for service delivery. However, the Zimbabwe literature indicates that legislative constraints limit civic participation at the municipal level because Sections 88 and 122 of the Urban Councils Act does not provide for input from residents associations ([Zinyama 2012](#)). Inadequate participation in local government issues by ordinary citizens and ineffective organizational and human resources have been identified as key capacity limitations in many developing countries ([Zinyama 2012](#); [ZIMCODD 2013](#); [Imonikhe & Moodley 2018](#); [Marumahoko *et al.* 2020](#)). Furthermore, [Durley *et al.* \(2003\)](#) indicate the importance of social and political support in order to inform the public of local water issues and for the public to be willing to participate in the water planning process. For these reasons, [Folifac \(2007\)](#) applauded South Africa's way of ensuring public participation in its policy development. Prior to the adoption of a policy, often in the form of a 'white paper' which describes the official government policy, the government of South Africa makes sure that a 'Green Paper is made available to a wide group of interested parties through the country and this becomes the topic of regional and national workshops and conferences, with special focus on previously disadvantaged sectors' ([Abrams 1996](#)). To improve fairness, trust and competence in decision-making, it is imperative to have a full understanding of public concerns.

Technical/human capacity

The global literature argues that creating a knowledge base (capacity building) involves investing in skills that are able to meet future implementation challenges ([OECD 2015](#); [Hudson *et al.* 2019](#)). Inadequate human capacity building, including training, peer learning, information guidance, and project management skills, constrains implementation success ([Hudson *et al.* 2019](#)). Many scholars argue that insufficient funding or misdirected resources leads to incompetent water managers and operators. All these factors which hinder effective policy implementation are not mutually exclusive but rather influence each other. Furthermore, in most African countries, municipalities are run by mayors, councillors and local government officials who are not technocrats and the understanding of WSS issues by these officials needs to be raised through workshops and in-service training. Competent service providers or utility operators are an important resource for the delivery of safe drinking water. Similarly, [Hudson *et al.* \(2019\)](#) and the Zimbabwe Service Level Benchmarking Report ([SLB 2018](#)) both conclude that WSS service provision requires an adequate technical capacity to implement sustainable operational and maintenance programmes including source water protection plans, water safety plans, risk management systems, infrastructure capital investment and repairs. For example, South Africa relies on 1,100 municipal plumbers countrywide to operate and maintain water infrastructure under the NWA ([Maphela & Cloete 2020](#)). This supports the view that capable managers are indispensable for an efficient water system

(Lebel & Reed 2010). OECD (2015) acknowledges that availability of competent human resources is the greatest challenge to efficient water service regulation and provision in developing and emerging economies.

CONCLUSIONS

This review has identified and assessed studies in Zimbabwe and other countries that have analyzed water policies in order to understand the factors which create gaps in policy implementation. Case studies in Canada, South Africa, Tanzania, Nigeria, Ghana, the UK, and the USA among others that participated in the OECD WGI project, as well as the review of studies from Zimbabwe, demonstrate that numerous interlinked factors limit the effective implementation of water policies. It is concluded that these implementation gaps are mainly a result of capacity limitations in institutions, finances, and social and technical/human resources. In most developing countries as well as small towns in developed countries, utilities are affected by sparse populations, migration to bigger cities and an aging population, which all limit the capacity to generate revenue. A strong interconnection is also seen between the various capacity elements, for example, a technical/human capacity depends on the availability of funding to pay staff and conduct training programs, whilst institutional capacity requires people (through public participation) to achieve successful policy design and implementation. It is concluded that the literature confirms that WSS policy failures are widespread despite the availability of technical solutions and that these failures exacerbate water scarcity in many developing countries and emerging economies.

There is currently very limited literature available that analyses water policy in Zimbabwe. In order to overcome the water conundrums in Zimbabwe's urban areas it is recommended that a literature review combined with an empirical study of both qualitative and quantitative gaps between the ZNWP and its implementation be undertaken. In particular, the review and study should focus on capacity limitations in institutions, finances, and social and technical/human resources in Zimbabwe.

ACKNOWLEDGEMENT

This work was funded by the Research and Publication Committee of the University of Venda, South Africa.

CONFLICT OF INTEREST

The authors declare no conflict of interest for this study.

DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

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