


# Water sector value chain challenges: The case of Chris Hani District Municipality

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**Background:** This study examined the challenges faced by the water sector value chain in the Chris Hani District Municipality (CHDM). The investigation was prompted by the issues related to water shortages and the poor quality of potable water in the area.

**Aim:** The aim of this study was to identify the challenges in the water sector that are responsible for the precarious water provision services that are experienced at CHDM.

**Setting:** The study was undertaken at CHDM, Eastern Cape, South Africa.

**Methods:** The study used qualitative research techniques to delve deeper into the water issues at CHDM, and 10 sampled participants were interviewed.

**Results:** The results show that the CHDM does not seem to adhere to some of the regulations of the *Water Services Act of 1997*. There is also a continuation of the non-payment culture by some water consumers because of poor affordability, resistance and municipal billing challenges.

**Conclusion:** Regarding the interplay between water as a constitutional right and water as a business, the study concludes that consumers who can afford to pay should do so, while the indigent should be subsidised by the government. In terms of infrastructure, bulk water supply should be upgraded, dilapidated infrastructure should be replaced, revenue collection should be improved and there should be ring-fenced revenue for the provision of water services.

**Contribution:** The study's contribution is primarily on addressing some of the service delivery issues such as the municipality's performance in relation to the provision of water services.

**Keywords:** billing; infrastructure; non-payment culture; unemployment; water services.

## Introduction

Several South African communities are experiencing water supply challenges. People struggle to access water for drinking, household use and commercial use (mines, factories and agriculture) (Viljoen & Van der Walt 2018). The nature of the water supply challenges includes water shortages and poor quality of potable water. This is a serious challenge because it can lead to loss of life, loss of revenue and poor sanitation (Nhapi 2015). The different forms of water challenges have ripple effects because poor sanitation consequently results in dangerous waterborne illnesses, such as cholera, typhoid fever and diarrheal diseases (Nhapi 2015). In addition to these illnesses and diseases, other adverse effects are rather insidious and manifest later, while others manifest immediately with varying levels of severity. For instance, inappropriate chemical treatment of water can translate to overfluoridation, which can result in mottled teeth and brittle bone disease, a condition where bones can fracture under light force (Department of Water and Forestry 2008). Discolouration of the teeth is another effect, and it occurs when teeth are being formed and fluoride is consumed at levels higher than what is considered optimal for health. Even in hazardous amounts, fluoride has no taste, colour or smell, and it is not visually noticeable (Department of Water and Forestry 2008).

Given these general South African water challenges, for feasibility purposes, this study sought to investigate them at a specific location, that is, Chris Hani District Municipality (CHDM), and particularly delve into the water sector value chain as it relates to this municipality. More so, this is because the CHDM water challenges have led to cholera and other related diseases (Chris Hani District Municipality 2020).

According to CHDM (2020), this is a category C municipality that is situated at the centre of the Eastern Cape, and its area size is 36 407 km<sup>2</sup>. It comprises six local municipalities, namely Inxuba Yethemba, Enoch Mgijima, Intsika Yethu, Emalahleni, Sakhisizwe and Dr AB Xuma. Chris Hani District Municipality's total population is around 849 000 people, which is 12.0% of the

Eastern Cape population. This population predominantly (63.8%) lives in rural areas, with only 35.2% living in urban areas. The municipality's main sectors of the economy are community services (52%), trade (15%), finance (14%), transport (6%), manufacturing (4%), agriculture (4%) and electricity (2%).

The CHDM is prone to severe water shortages caused by drought and a combination of systemic and structural issues. The systemic and structural issues include ageing infrastructure, power outages at pumping stations, politics, theft, vandalism, infrastructure capacity in relation to population growth, inadequate revenue collection, skills, and financial and environmental non-compliance. Additional issues include poor operations and maintenance, the dynamics between the district municipality and its local municipalities (such as dissatisfaction with the water supply services takeover by CHDM from the local municipalities), billing challenges, illegal connections and sabotage (Ellis 2021; Kubukeli 2020).

The nature of these challenges depicts their wide range, hence the investigation of the value chain for water services. The water services value chain includes:

- Department of Water and Sanitation (DWS) – water custodian in the country.
- Water boards – provide bulk water services.
- Water Service Authorities (WSAs) – municipalities that are in charge of guaranteeing water service accessibility and have the ultimate responsibility of making sure that end-users have access to water and sanitation services within their area of jurisdiction (Office of the President 1997).
- Water Service Providers (WSP) – the primary responsibility of a WSP is to deliver water services in compliance with the *Water Services Act 108 of 1997*, the bylaws of the WSA and any other special requirements spelt out in a contract with the WSA (Department of Water and Sanitation, n.d.).
- Water user associations – water users' cooperative associations that carry out water-related activities for the benefit of their members, with association members collaborating and pooling resources to address their water-related needs such as water infrastructure for irrigation purposes.
- Municipalities – responsible for reticulation.
- Consumers – households and industries.
- Wastewater management and treatment entities.

The respective stakeholders encounter several challenges that translate to compromised water provision services. The challenges include resources (lack and/or management of financial, material and other resources), administration and governance. Table 1 provides a holistic view of some of the challenges experienced by these stakeholders.

### Precarious water provision services

The problem this study addresses is the precarious water provision services that are experienced at CHDM. The precarious water provision services range from

**TABLE 1:** Examples of challenges experienced by stakeholders in the water supply value chain.

Entity	Examples of challenges
DWS	It struggles to deliver on its mandate because, <i>inter alia</i> , it has difficulty spending its budget as it, for instance, failed to spend more than R2 billion of its budget in the 2021–2022 financial year (Gerber 2022)
Water boards	Debt collection – water boards across the country are owed R14.6bn by municipalities (Matlala 2022)
WSA	High municipal consumer debt and poor financial management, poor governance and accountability, lack of skilled human resources, lack of planning (most WSAs do not have a maintenance plan for their water infrastructure) and infrastructure (backlog in the infrastructure provision, maintenance and rehabilitation). Some municipalities underspend on their allocations and fail to deliver on projects because of poor performance, financial and project management as well as poor quality of workmanship by contractors (Toxopeus 2019)
WSP	Many WSPs have not been able to meet their obligation of consistently supplying clean water to communities
Water user associations	While their primary objective is to manage water resources and distribute them fairly to all authorised users, several issues that should have been addressed at inception, such as providing water to farm residents and supporting emerging farmers, were overlooked (Pegram & Mazibuko 2003)
Municipalities	Most municipalities have serious governance, accountability, capacity, consumer debt and financial management challenges.
Consumers	The number of households that do not pay for consumed water is high, thus affecting the performance of municipalities.
Wastewater management and treatment entities	The quality of raw water is highly polluted in many areas and thereby requires considerable chemical treatment, which is a costly exercise and sometimes the treatment processes do not meet the required standards

DWS, Department of Water and Sanitation; WSA, Water Service Authorities; WSP, Water Service Providers.

intermittent to zero water supply in the respective communities (Ellis 2021). A myriad of factors contribute to this challenge, including water scarcity, ageing infrastructure, water leaks, climate change, water treatment and distribution systems, population growth, unplanned human settlements, drought, worsening pollution and the concomitant deterioration of raw water quality caused by sewage getting into waterways as a result of failing municipal wastewater treatment works as well as chemicals from agricultural and mining operations, weak water conservation mechanisms, collapse of freshwater ecosystems, which includes aquatic life, as a result of the high concentration of contaminants flowing into water bodies and destruction of river catchments (Ellis 2021; Gerber 2022; Marcatelli & Büscher 2019; Tapela, Ntwana & Sibanda 2015).

The implications for the precarious water provision services include dehydration and loss of life in humans, animals and plants; school closures; sanitation crisis (poor hygiene, blockage of toilets and diseases such as cholera); job losses, particularly in the agriculture sector; and the imminent day zero (the day when the levels of dams are critically low) (Nhapi 2015).

### Tricky balance of water provision services: Water, the constitutional right and water, the commodity

*The Constitution of the Republic of South Africa, Act 108 of 1996* notes that 'everyone has the right to have access to sufficient food and water'. While water provision is a constitutional right in South Africa, there are various factors that compromise its successful delivery to several communities around the country, hence the service delivery protests. Protests around

the country over consistent water supply are a regular occurrence as reflected in the reports from the media, municipalities, water entities and government departments (Chiguvare 2022; Tapela et al. 2015). Water and sanitation service delivery protests led to more than 585 public demonstrations between January 2013 and April 2021 (Gould 2021). Service delivery protests also continue to bedevil the CHDM, as residents complain about water shortages, malfunctioning sewerage systems and inadequate rubbish collection (Damba-Hendrik 2023).

South Africa has committed itself to achieving the sustainable development goals (SDGs) by 2030. With respect to water and sanitation, the SDG targets are to:

- attain fair and universal access to reasonably priced, clean drinking water for all;
- attain, for all, universal access to fair and sufficient sanitation and hygiene;
- minimise the discharge of dangerous chemicals and materials, end dumping and reduce pollution to improve the quality of the water (United Nations 2022).

In spite of these noble goals, there are challenges with the water treatment and distribution systems. These include non-payment for water services, mismanagement, corruption (Marcatelli & Büscher 2019) and compromised operation and maintenance of water systems.

As it is a constitutional right, the responsibility of government includes the provision of water services, in all spheres that is, national, provincial and local, with the DWS being the caretaker of the water resources in South Africa. The DWS' mandate is to promote effective and efficient water resources management for the purpose of ensuring sustainable socioeconomic development.

To ensure access to water by all South Africans, the country adopted the Indigent Policy, thereby offering free basic services (water, electricity and solid waste collection) to eligible citizens. The objective of the Indigent Policy is to include individuals who may be excluded from accessing basic services because of poverty; thus, it provides a social safety net (Kuhlengisa et al. 2024). According to regulations made under the *Water Services Act, 1997*, a minimum of 25 L of drinkable water per person per day or 6 kL per family per month is needed for basic water delivery services:

- within 200 m of a household;
- at a minimum flow rate of 10 L per minute or higher;
- sufficient to guarantee that no consumer has a supply shortage for longer than seven consecutive days in any given year (Department of Water Affairs and Forestry 2001).

It is reported that these regulations for water supply services are not adhered to in some parts of the CHDM (Ellis 2021; Pongoma 2022; Sizani 2023). In some cases, the 'people have to wake up as early as 3 am to collect water ... [as] the taps only run for about an hour each day', and some of the reservoirs are kept dry for several months (Sizani 2023:1). A

total of 21072 (9.39%) of CHDM households have shared piped water more than 200 metres away from the residence and 57402 (25.90%) with no formal piped water; therefore, this indicates that the CHDM is falling short of the minimum requirement for water supply services as per the *Water Services Act, 1997*.

The free basic services are appreciated by many people at CHDM as the 'percentage of people living in poverty has increased from 73.05% in 2010 to 74.92% in 2020' (Chris Hani District Municipality 2023:66). The term 'basic water supply' refers to the minimal amount of water supply services that must be provided in order for residences to consistently receive an acceptable quantity and quality of water to support life and personal hygiene (Office of The President 1997). Consumers must pay for their water usage that exceeds the free allocation. The payment of water consumption is, however, a serious challenge because of the nonpayment culture by many South Africans, inability of municipalities to collect debt from water consumers, which translates to the inability of municipalities to pay bulk WSPs, and consequently the inability of bulk WSPs to carry on with their obligations that include collection, treatment and distribution of water to municipalities (Damba-Hendrik 2023; Maseko, Robbetze & Masungini 2023; Matlala 2022).

## Theoretical framework

This study is positioned within the constructivist paradigm, which moves from the premise that knowledge creation happens through experience, engagement and interaction with the environment (Brau 2020; Mascolo & Fischer 2005). The paradigm is aptly referred to as constructivism because it is based on the active participation of the participants in the construction of new knowledge through the application of their existing ideas, knowledge and experiences and the integration of the old and new knowledge that emerges from this process (Helen, Carr & Steinruck 2015). Constructivist research examines people's interpretations of their experiences and viewpoints; the interpretations are then used to develop a deeper understanding of the issue being investigated and to inform policymaking. Through a constructivist design, which is the application of constructivist principles, the participants actively process and interpret their experiences and their world.

Thompson (2017) observes that constructivist researchers predominantly employ qualitative data collection mechanisms such as focus groups, interviews and observations, thereby giving the research participants space to show or describe their experiences. It is for this reason that the research findings sometimes have quotes of what the participants said or descriptions of their actions. The data analysis mechanisms include the identification and categorisation of themes from the data. The constructivist approach to data analysis is inductive and the participants' interpretations are helpful for the generation of new understandings of the phenomena and the creation of new theories based on the participants' perspectives.



## Research methods and design

The study used qualitative research techniques in order to delve deeper into the CHDM water challenges and develop a water provision paradigm that is informed by a variety of viewpoints from stakeholders who are knowledgeable about the water sector. The research methodology included primary data collection through semi-structured interviews with a sample of relevant officials from the CHDM and water consumers as well as analysis of secondary data (pertinent literature). The secondary data sources included official reports from the CHDM, government departments and the Parliament. The semi-structured interviews enabled a thorough diagnosis of the challenges from a demand (consumer) and supply (municipality) perspective, thereby shedding a deeper understanding of the cause(s) of the problem, as well as its nature and extent. The interview questions were premised on the objective of the *Water Services Act* and the National Water Resource Strategy's vision for 'equitable and sustainable access to water and sanitation services in support of socio-economic growth and development' (Department of Water and Sanitation 2022).

Many researchers have come to the realisation that there is more than one absolute truth waiting to be uncovered (Leedy & Ormrod 2001). Instead, there are numerous viewpoints held by various people, and each of these viewpoints is equally true or valid. The research design and data analysis took this into consideration by not aiming to reach a consensus on the observations, experiences and proposed solutions, but rather seeking to gain a deeper understanding of the challenges and their proposed solutions. This is because different people may observe things differently because of their knowledge, interests, experiences and expectations.

### Sampling

Purposeful sampling was used in the study. As purposeful sampling is a targeted data collection approach with predetermined research participants who are included in the study on the basis of their relevance, it is 'deep diving' into the knowledgeable research participants and extracting the required information, hence Mack et al. (2005) argue that it uses preselected criterion that is relevant to a particular research question. The inclusion and exclusion factors in this study are, therefore, relevant, as purposeful sampling is primarily premised on the relevance of potential respondents. The relevance of the potential respondents was determined by their knowledge and experience of water services at the CHDM. This means only the most relevant officials were included, and the least relevant ones were excluded. Given that everyone has a perspective on water services because of the universal use and consumption of water, the concept of what is most and least relevant comes into play.

Because the study is specifically about water services, and the CHDM includes multiple directorates and officials, the most pertinent officials with the necessary information were those who work in the Technical Services Unit of the

Engineering Department. The Engineering Department's Technical Services comprises three sections – WSA, WSP and Project Management Unit (PMU). The Technical Services component is responsible for reticulation of the water and sanitation network, renovation of the infrastructure supporting water services, development of bylaws, development of bulk water and sanitation services, geographic information systems (GIS) that are used for water services development planning, water demand management, and water services provision through the operation and maintenance of water service infrastructure (Chris Hani District Municipality 2020).

As purposeful sampling was also used with respect to consumers, the researcher was of the view that adults who have been residing at the CHDM for the past 5 years would have useful information about their experiences and observations of the CHDM water services. The research participants were three senior officials from the Engineering Department's Technical Services and seven consumers from the CHDM's local municipalities, thus the sample size constituted 10 participants.

As this was a qualitative study, each of the participants was probed deeply enough, thus the sample size was sufficient to provide rich information that assisted in identifying the challenges in the water sector that are responsible for the precarious water provision services that are experienced in some parts of CHDM. Malterud, Siersma and Guassora (2016) argue that sample sizes are as important in qualitative studies as they are in quantitative studies, although they are determined differently through information power, which is generally referred to as saturation. With information power, fewer participants are required if the selected participants hold more relevant and up-to-date information.

### Data analysis

The data gathered from the interviews and documents were then analysed logically and methodically with qualitative techniques such as content analysis and thematic analysis. The participants' responses were juxtaposed with the data from other forms of data such as official reports from the CHDM, other municipalities, government departments and Parliament.

Content analysis is a research method that examines data content by taking a closer look at particular concepts and words because of their significance as depicted through commonality among research participants. Such analysis reveals patterns, trends and differences in responses, so the researcher can make connections between concepts. It is made for the purpose of reaching reliable conclusions about the respondents' thinking and perspectives.

### Ethical considerations

Ethical clearance to conduct this study was obtained from the University of KwaZulu-Natal, Human and Social

Sciences Research Ethics Committee (reference no.: HSSREV/00006090/2023).

## Results

To ensure the confidentiality and anonymity of the research participants, the responses from the participants were coded as Respondent 01 to Respondent 10. Respondents 01 - 03 are the CHDM officials and Respondents 04 - 10 are the consumers of the CHDM water services.

### Roles and functions played by respective stakeholders in the Chris Hani District Municipality water value chain

Water services at CHDM take a full circle. This includes taking responsibility for bulk water infrastructure such as dams and pipelines (construction, operation and maintenance), running the whole system up to the delivery of potable water to households and taking responsibility for used water to ensure its safe return to the system for reuse. Hence, the CHDM's roles in the water value chain according to its officials include water abstraction, pumping, purification and distribution, as well as sewer collection and treatment.

The local municipalities under the CHDM handed over their water services provision function to CHDM. To this end, the CHDM has satellite offices in the local municipalities that work in collaboration with the local municipalities in the following areas:

- Budget and treasury office – finance, cashiers, enquiries and metre readers.
- Technical services – water and sanitation operations and maintenance.
- Water quality.
- Customer care.

Respondents 04 and 10 noted that the difference between the supply of water services in CHDM and other municipalities is that in CHDM, the supply of water rarely reaches the entire community in the villages around CHDM. This, however, affects many other municipalities because most rural households do not have access to piped water and rely on community taps with water sources ranging from municipal water, boreholes, rivers or streams, and dams. This suggests that the CHDM does not seem to adhere to the regulations of the *Water Services Act, 1997*, which require water supply services to not exceed 200 m from the dwelling.

The efficiency of communication of interruption of water services was also bemoaned by Respondents 05, 09 and 10 as they were of the view that CHDM is rather weak in this regard in relation to other district municipalities. They reported having been without water for varying extended periods in their respective communities, thereby underscoring the CHDM's violation of the *Water Services Act, 1997* which requires water services to be 'effective enough to ensure that no consumer is without supply for

more than seven full days in any given year' (Department of Water Affairs and Forestry 2001).

Regarding the division of labour, the stakeholders' understandings do not seem to be aligned. According to Respondents 01–03, water services are decentralised units at the respective local municipalities and CHDM contributes towards addressing the water challenges experienced in local municipalities through the allocation of resources (financial, human or technical). In its WSP role, CHDM's responsibility includes ensuring that water is available to all communities, thus it allocates funds accordingly for the construction of infrastructure and monitors infrastructure projects while ensuring that communities are involved during the construction phase through the Project Steering Committee (PSC). In cases where the water services are not provided or interrupted, CHDM communicates accordingly through community meetings, social media and other platforms to make sure that communities are informed about the particular problem and are given feedback regarding the resolution process. However, there does not seem to be a clear understanding by all the stakeholders regarding the decentralisation of water services at local municipalities when the water services are in the province of the district municipality. This is evident in the message from the Emalahleni Local Municipality spokesperson to the protesters that they were erroneously blaming the local municipality because the water provision service is the province of the district municipality (Damba-Hendrik 2023). While there may be valid reasons for the shifting of water services to the district municipality, the local municipalities are still criticised by some consumers for a service for which they are not responsible. Other consumers are also of the view that the service by the district municipality is not as responsive as the service they enjoyed from the local municipalities because the turnaround times for attending to reported water issues now seem to be longer.

The water and sanitation departments experience difficulties because of poor capital investment in cases where the line between the WSAs and WSPs is not well defined, and activities are not ring-fenced (Bayliss 2016; SALGA 2011). Furthermore, the lack of financial independence of the water and sanitation departments in some of the municipalities is identified by SALGA (2011) as one of the factors contributing to the infrastructure challenges, because these departments receive their share of budgetary allocations from the Council's pool. These departments then face competition from others for their budgetary allocation, thereby jeopardising the respective municipalities as neglected upkeep and growth of water and sanitation infrastructure is one of the problems resulting from the lack of ring-fenced funding for these departments. The DWS is of the view that WSPs must be able to support themselves financially, have the resources

to manage and maintain the infrastructure for providing water services, be able to grow the water network as needed, and make long-term investments for infrastructure replacement and rehabilitation. This is particularly important because water is a constitutional right. Lack of funding, among others, leads to postponed maintenance and growth of the water and sanitation infrastructure.

### **Main hindrances to Chris Hani District Municipality's efficient and effective water supply**

In response to the question about whether water should be paid for by the consumers, all the respondents were of the view that it should be paid for. The reasons given were mostly about the costs of providing water, the logic of consumers to pay for what they consume and consumers' contribution towards the sustainability of water infrastructure and water services. The costs incurred by the municipality for which consumers have to pay include water purification (including chemicals and electricity), infrastructure (including pipes to different communities and homes), machinery and personnel. Pongoma (2022) clarifies the misunderstanding that people are paying for water and explains that:

[I]t's not the water that they pay for. It is the service that is needed to draw the water from the river. We then pipe it, clean it and pump it to bring it to their houses. That's the service we provide and charge for because there is a cost element involved. (p. 1)

'[T]o achieve the water provision responsibility, the municipality needs to pay for bulk water from DWS, construction cost [or] capital cost and operations and maintenance cost. These costs are not all covered by grant funding. Therefore, affording consumers should pay and the indigent get subsidised by government through Equitable Share Grant.' (Respondent 03)

Respondent 07 added that municipal water services reduce the burden of carrying water by women from faraway places, thereby ensuring their safety as well as access to safe drinking water.

While some water consumers agreed that they consistently pay for the water they consume, others admitted that they do not. The reasons given for the causes of the non-payment culture by some water consumers included poor provision of water services to communities as sometimes there is inconsistent supply in some areas, high cost of living and poor affordability in light of the high unemployment rate, continuation of the *toyi-toyi* culture from the refusal to cooperate with the state during apartheid times and billing challenges.

According to the CHDM (2020), the provision of water services is compromised mainly by two performance areas: (1) the ability of local municipalities to recover water and sanitation fees from their customers and (2) the inability of wastewater treatment plants to produce effluent that complies with legislative standards because of the treatment works' state of dilapidation, which requires significant capital investment to meet the acceptable standards.

Respondent 01 noted that the inconsistent water supply in some areas is partly attributed to high demand because of population increase and the mushrooming of new unplanned settlements. This translates to the disgruntlement of consumers who then resort to non-payment of services as a demonstration of their dissatisfaction. He added that load shedding is another contributing factor to the inconsistent water supply as some pumps operate on electricity.

The billing challenges seem to be a considerable deterrent to some of the consumers as a respondent argued that:

'[T]he municipality does not send invoices. When they do, most of the time, the bill is inflated because they do not take metre readings but just estimate the household consumption. This is so frustrating such that some who can afford are resorting to providing their own water through boreholes and water tanks, the same way people are running away from Eskom through installation of solar panels.' (Respondent 08)

While Respondents 08 and 09 bemoaned the billing challenges, they added that on the other hand, the non-payment culture is unlikely to stop as there are no consequences for non-payment, and this aggravates the municipality's revenue collection challenges and consequently undermines service delivery efforts.

### **Required changes to ensure reliable water supply**

The performance assessment of the stakeholders in the South African water value chain had mixed views from the respondents. The reasons by Respondent 01 and 03 who thought DWS was not performing satisfactorily included their understanding of the transfer of old infrastructure by DWS to local municipalities, yet DWS is now reluctant to fund replacement of that old infrastructure. While the municipality receives the Municipal Infrastructure Grant (MIG), Water Services Infrastructure Grant (WSIG) and Regional Bulk Infrastructure Grant (RBIG), these fall below the required financial resources considering the volume of infrastructure that requires replacement, hence the backlogs are not getting successfully cleared. Municipal Infrastructure Grant is for the creation of new water services infrastructure as well as renovation and modernisation of current infrastructure, RBIG is for the construction of sanitation and bulk water infrastructure, and WSIG is for creating temporary and intermediate water supplies to clear up water and sanitation backlogs and to renovate the infrastructure that is already in place.

There was also a sense from Respondent 02 that because of its distance away from the communities, DWS as a national department does not have a grasp of the issues in the various communities, hence the delays in funding the much-needed water infrastructure. Despite the DWS' negative performance assessment, Respondents 01 - 03 maintained that it should not be removed or replaced in the value chain, instead it should improve on its regulatory and funding roles.



The performance of the water boards was also negatively viewed by Respondents 01 - 03; despite their capacity and expertise that generally exceeds that of many municipalities, they are only interested in bulk water supply and not reticulation. Several municipalities could benefit if the mandate of the water boards could be extended beyond bulk water supply to also cover reticulation, they thought. They were of the view that there are some water boards that are involved in reticulation maintenance, through operations and maintenance contracts with particular municipalities, and these are the services that should be extended to be a permanent feature of the water boards, including wastewater treatment works.

Despite the unfavourable performance assessment of the water boards, Respondents 01 - 03 maintained that they should not be removed or replaced in the value chain; instead, they should focus on addressing the challenges they experience in their bulk water supply services.

The motivation for those who viewed the performance of the WSA positively (Respondents 02 - 03) is that their focus is on regulation, thus by and large, their monitoring of the WSPs is quite controlled as the guiding prescripts are clear because they are legislated. Given this positive performance assessment of WSAs, Respondents 02 - 03 were of the view that they should not be removed or replaced in the value chain, as their focus on compliance plays a crucial role in the chain. However, it was noted that despite their proximity to communities, WSAs struggle with revenue collection and maintenance.

The motivation for a positive performance assessment of the water user associations by Respondents 01, 07 and 09 was on account of their perceived efficiency over the years as they look after the interests of their members. Apparently, they are generally known to have a good response time. Given this positive performance assessment, the motivation for them not to be removed or replaced in the value chain by these respondents is that they seem to be effective in dealing with allocations to their users.

The positive performance assessment of the municipalities by Respondents 01 - 03 was on account of their commendable attempts to effectively render services despite the environment that is characterised by a lack of funding. They were empathetic to the municipalities despite the operational challenges. Hence, they advocated for them not to be removed or replaced in the value chain, instead, they should improve their water provision role, revenue collection and infrastructure maintenance, and they should also be adequately supported.

The positive performance assessment of some of the consumers (households and industries) by Respondents 04, 05, 08 and 10 was on account of their commendable practice that includes payment for consumed services. Because payment for services is not a practice shared by all consumers, these respondents believe that effective systems should be

established to encourage and/or require consumers to pay for water services.

The motivation for those who viewed the performance of the wastewater management and treatment entities positively (Respondents 01, 02 and 07) is that their focus is on just water treatment; thus, their treatment is commendable. However, they were of the view that they should be removed or replaced in the value chain as their services are a duplication of the services carried out by municipalities and water boards.

Regarding what could be done to address the problem of unreliable water supply in CHDM, Respondents 02 and 03 suggested that bulk water supply should be upgraded, dilapidated infrastructure should be replaced, revenue collection should be improved and there should be ring-fenced revenue for the provision of water services.

### **Striking the balance of water provision services: Water, the constitutional right and water, the commodity**

The need for the payment of water provision services has clearly been articulated by the respondents as well as the hindrances causing non-payment for the services. The factors that translate to non-payment for the services include structural (e.g. poverty), systemic (e.g. billing challenges) and human (e.g. rebellion) factors. These must be dealt with accordingly, using well-customised, specific, detailed and appropriate solutions.

As poverty is one of the factors contributing towards the non-payment of services by consumers and concomitantly compromised delivery of water services by the municipality, this underscores the fact that job creation must be prioritised. The several job creation initiatives at CHDM have had mixed results; however, they have not managed to substantially change the municipality's economic outlook. To improve job creation at CHDM, the municipality's competitive advantages should be considered. Given that CHDM's main economic sectors are community services (52%), trade (15%), finance (14%), transport (6%), manufacturing (4%), agriculture (4%) and electricity (2%) (Chris Hani District Municipality 2020), this requires serious structural and systemic changes given the municipality's competitive advantages such as agriculture (huge arable land) and youthful population. The most dominant sector, community services (52%), is not income-generating and does not directly contribute towards economic development. Community services include providing the communities with education services, health services, social services, environmental services, community safety services, sports, arts and cultural services, road traffic management and emergency services.

Regarding the systemic factors that include billing challenges, it is important for the CHDM to review the efficiency and effectiveness of its systems, including its performance management system. Part of the review processes should include an examination of internal and external CHDM communication, implementation of policies, consequence

management, standard operating procedures, induction programmes and compliance (financial, technical and legal). It is unfortunate that municipalities sometimes have to rely on other stakeholders for their effective delivery of services. The billing challenges are, to some extent, aggravated by the inefficiencies in the South African Post Office because the municipalities use it, among other means, to send monthly statements to consumers. Some consumers are not yet optimally using digital communication services like electronic mail and thus cannot receive their monthly statements if the post office is unable to send them.

Regarding the human factors that include rebellion, it is important for CHDM to restore its authority and respect. The CHDM officials and customers should cultivate genuine care, respect and trust in the municipality and, this can be achieved, among others, by the municipality leading in this regard through its exemplary service. As positivity attracts positivity and negativity attracts negativity, the positive image of services by the municipality will most likely encourage the consumers to acknowledge the impact of not paying as they will be seeing the value for their money and the delivery of services for which payments have to be made. Of course, this will not work for all consumers, thus appropriately customised strategies should be considered such as the legal route where appropriate. For diligently paying consumers, Maseko et al. (2023) recommend that they should be given monthly discounts and rebates at the end of the year, as this will serve as a strong motivation for the consumers to adhere to the municipal credit policy. The municipalities' failure to enforce their credit management policies translates to poor debt collection, and when debts are not paid, the municipality faces financial challenges that have a detrimental effect on the provision of services (Maseko et al. 2023).

The combination of the different steps towards the resolution of the CHDM challenges will eventually translate into the fulfilment of the business part of the water provision services. The findings reveal that the water supply challenges at CHDM are because of multifarious factors, which include several components of the water value chain. For the smooth delivery of water services, it is crucial for all the components of the water value chain to play their respective parts with excellence.

### **Improvement of the Chris Hani District Municipality's performance management system**

The systemic and operational challenges attributed to the CHDM such as billing issues underscore the notion that an improvement of the CHDM's performance management system is required. The practice of continuously enhancing an institution's functioning and accountability with the aim of carrying out plans, determining the effects of those plans and gauging the effectiveness of those plans' execution is known as performance management (Department of Constitutional Development 1999; Foreign Affairs, Trade

and Development Canada 2013; The Presidency 2007). The Department of Local Government (eThekweni Municipality 2008) supports this understanding by stating that the management of performance is a strategic way of doing management. It offers a set of tools and procedures to managers, executives, employees and stakeholders at different levels so they may plan, monitor, measure and review the organisation's performance on a regular basis in terms of impact, efficiency, and effectiveness indicators and targets. A caveat in this regard by Chiwawa and Wissink (2024) is that in public sector organisations, there is an uncoordinated gap between strategy formulation and strategy implementation. When compared to the emphasis placed on strategy formulation, there is a noticeable and progressive slowdown in the commitment to strategy execution, monitoring and evaluation in the public sector, which leads to strategy failure.

According to the *Local Government Municipal Systems Act 32 of 2000* (The Presidency 2000), the municipality must formulate suitable key indicators of performance as a benchmark for evaluating performance, including results and impact, in terms of its performance management system. It also recognises that the performance management system helps the municipality, as a whole, maximise its potential to accomplish its goals and raise the standard of living for its citizens. This is because the performance management system is useful for making decisions, tracking the results of strategic plans, evaluating performance, diagnosing problems that impede the achievement of goals, managing processes for continuous improvement, providing motivation, and comparing and creating records (Bredrup 1995).

### **Water infrastructure at Chris Hani District Municipality**

Water infrastructure challenges at CHDM require a speedy resolution as there are water leaks, broken metres and regular bursts in the water pipelines. The CHDM needs to deal with the theft of water infrastructure by closely working with community members and the South African Police Services (SAPS) to curb this challenge. As water services are a key factor in determining (attracting or discouraging) investments in an area, it is crucial for CHDM to prioritise excellence in this area as that could potentially translate to increased investments and job creation. For partnering with the private sector, it may be important for the CHDM to have a very good understanding of its infrastructure needs by conducting an infrastructure audit and thereafter, in collaboration with the private sector, engage in the refurbishment of existing infrastructure to cut down on losses and waste, obtain a precise database of connections and meters, as well as the population profile so as to determine the categories of non-paying consumers (indigent and affording defaulters). This will improve municipal revenue, particularly if this database is connected to the billing and collection database. To extend the life of the infrastructure, CHDM should invest in an asset management system that is connected to an operations and



management system, so that periodic checks and/or services could be undertaken timely.

### Limitations of the study and recommendations for future research

The water value chain includes several stakeholders such as DWS, water boards, WSAs, WSPs, water user associations, municipalities, consumers, and wastewater management and treatment entities. For feasibility purposes, this study could not investigate all the stakeholders even though many of them, in one way or the other, have a bearing on CHDM water services. The focus of this study was limited to CHDM.

Considering the population size at CHDM with approximately 849 000 people in about 170 605 households, it would have been prudent to have a larger population size. This, however, was mitigated by the fact that water provision is a community issue and not an individual issue. Therefore, the respondents from the different local municipalities were in a position to reliably give an account of their communities' experiences and observations. Moreover, the fact that the study used qualitative research techniques enabled deeper delving into the CHDM water challenges as the researcher used semi-structured interviews to guide the conversations with the participants.

Regarding further research, it is important to note that the water infrastructure challenges are not only because of systemic issues (e.g. lack of funding) but also because of inappropriate human conduct (e.g. theft and vandalism). While suggestions have been made in this regard in terms of how the CHDM could address this challenge, collaboration with the SAPS will not address the root of the problem. The root of the problem that needs to be established encompasses what causes, motivates and sustains the theft and vandalism that seems to be on the rise in many South African communities.

### Conclusion

This study illuminated the multifaceted challenges plaguing the water sector value chain within the CHDM. By highlighting the disconnect between regulatory frameworks, such as the *Water Services Act of 1997*, and actual practices within the CHDM, this research underscores the urgency for improved governance and accountability within the water sector. It was explained that the theoretical base of this study is the interplay between water as a constitutional right and water as a business, and the meaning and dynamics of this relationship are defined through the lenses of constructivism theory, it enables the examination of the people's interpretation of their experiences. These interpretations were then used to develop a deeper understanding of the water issues at the CHDM. The article noted that the need for efficient and sustainable water provision services is crucial; however, its realisation is compromised by factors such as poverty, billing challenges and non-payment for water services. To address these issues, the municipality must prioritise job creation and consider its competitive advantages, such as agriculture and

its youthful population. A performance management system, which provides methods and resources for consistent planning, monitoring and evaluation, is essential for achieving the CHDM goals for reliable water services.

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### Data availability

The author confirms that the data supporting the findings of this study are available within the article.

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