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THE SOCIO-ECONOMIC, TECHNICAL AND INSTITUTIONAL DIMENSIONS OF NON-PAYMENT FOR WATER: SOLUTIONS AND LESSONS FOR SOUTH AFRICA

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Introduction

Non-revenue water is becoming a major challenge in South African municipalities, with almost half of the country's water (47%) lost to the water system. This is higher than the global average of 30% and threatens the sustainability of water provision in the country. Non-revenue water has increased significantly since 2020 due to the impact of leaks, reduced payment levels, inaccurate billing, poor municipal governance, illegal connections, ageing infrastructure, with poor maintenance, and social, environmental and health disruptions (droughts, floods, COVID-19 pandemic).

Non-revenue water is water that is produced, treated and distributed by municipalities, but which does not generate revenue as it is lost from leaks, non-payment for water services, illegal use of water, and inaccurate billing.

The Water Research Commission (WRC) initiated a study in 2021 to identify and analyse the reasons for non-payment for water services for domestic users in South Africa. The project (WRC project no. C2019/2020-00474) aimed to understand the historical, geographical, socio-economic, technical and political factors which underpin payment for water services, drawing on knowledge from literature, legislation and policy, water sector specialists, municipal officials and residents. The study used eThekwini Municipality as a case study to explore the reasons why people do or do not pay for water services at the household level. Research was conducted between May 2021 and August 2024. Four literature reviews were conducted to understand the legal, policy, economic, political and social dimensions of payment for water services. Five learning labs were held with senior management in eThekwini Water and Sanitation Unit. Additionally, interviews were conducted with 15 water governance specialists.

Surveys were also undertaken in four different settlement types (low-income state-provided housing; peri-urban settlement on Ingonyama Trust Land; township; and middle-income suburb, 105 surveys referred to as the case studies survey) to understand how histories, geographies, socio-economic conditions, socio-technical relations and the quality of services provided, impact on payment for water services. In addition, the team was able to draw on a large household survey (500 surveys), that included a range of settlement types, representative of everyday life in eThekwini Municipality (referred to as the 'municipal-wide survey') and

survey data from research on water and sanitation service provision from 2016 to 2024 in low income, peri-urban and informal households.

Main results

The study found that payment for water services is a result of a complex set of spatial, socio-economic, technical, institutional and political relations that are context specific. Multiple factors shape payment for water services, including poverty and inequality, conceptions of the state and citizen responsibility, state-citizen relationships and trust, a post-apartheid funding model based on revenue generation which may not be sustainable, cultural constructions of water as a public good and a natural resource belonging to all, context (the history and geography of settlements, and households within those settlements), unequal access to reliable services, lack of participation of citizens in decision making related to payment for water services, weak administrative capacity and inadequate billing systems.

The study found that the majority of citizens understand that water is a scarce resource in South Africa and should be conserved and used efficiently. Most households are willing to pay for services when they obtain reliable services. The majority of citizens agree that those who cannot afford to pay for water should obtain water for free. Those who can afford to pay, should pay for water services, provided services are reliable and billing is fair and transparent. Payment varies across settlement type and the amount paid varies considerably. Payment for water services therefore varies spatially and in terms of contribution. The municipality invests more actively in reliable service provision where households pay, given their limited ability to service all areas equally, to ensure good revenue generation.

The six main reasons identified for non-payment for water services are a) inability to pay; b) low-income but with other priorities; c) belief that the model for payment is unfair; d) belief that the quality of service is insufficient and that withholding payment is justified and/or might improve service quality; e) short-sighted self-interest without direct consequence; and f) ambiguities in relation to communal tenure. The question of how water services should be funded is both challenging and contested and is the focus of this position paper.

1. Payment for water services as a social and economic construct

Water, a natural resource, is widely regarded as a fundamental human right and an economic good. It is collected and delivered to households through large-scale public (and in limited cases private) infrastructure, or captured locally for use. Ensuring the equitable and sustainable delivery of safe water for all remains a complex challenge in the global South and in South Africa. Universal access to water, reliability of water services, and water quality are critical issues in an unequal and water scarce country, facing increasing challenges with regards to water governance and management. Water Service Authorities (WSAs) and Water Service Providers (WSPs), primarily municipalities, are responsible for providing water services at the scale of local government. To fulfil this mandate, WSAs and WSPs require adequate funding to obtain bulk water, maintain infrastructure and ensure reliable services. WSAs generate revenue while striving to keep water affordable and accessible, even for those who cannot pay. Their funding comes from national government transfers, including non-conditional grants, municipal taxes, and direct payments from water users, including connection tariffs and charges for water use. Those who cannot afford to pay for water, based on criteria established in each municipality, have access to a limited amount (6000 to 9000 Kl) of free basic water. Although WSAs have the authority to set their own revenue models within this framework, determining appropriate costs and who should bear them is difficult.

The funding of water and sanitation services is governed through the Local Government Fiscal Framework (Ledger et al., 2021). This framework ensures that all the mandates of local government in terms of service delivery are adequately funded so that municipality's fulfil their constitutional responsibilities. The municipal water and sanitation system model is based on a cost-recovery approach.

According to Ledger et al., (2021) this model relies on the following assumptions and principles: all elements of the system's operating expenses, including payments to bulk suppliers, infrastructure maintenance, non-capital expenditure costs associated with maintaining the system and delivery of water and sanitation services in line with regulatory standards should be recovered from subsidies from the national budget and allocations from the Free Basic Water and Sanitation funds, as well as through services charges to residents and businesses who receive a service.

However, it is evident that this funding model is not delivering water and sanitation services in line with Constitutional rights and it is not sustainable. Ledger et al. (2021) argue that this may be: a) because the model is fundamentally flawed and that under this model municipalities or Water Service Authorities were never going to be able to achieve the targets set for them to provide accessible, safe and affordable water and sanitation services for all; or b) that the funding model is appropriate but that the governance and socio-technical, institutional, economic and environmental dimensions are the challenge. According to Ledger et al. (2021) and Bond (2022), the main problem is that there is not enough money (funds) allocated to the model and hence municipalities cannot meet their mandates. However, National Treasury argues that the problem is not the funding, but rather the governance and implementation of services. The other issue in the funding model is whether the income derived for service delivery is ring fenced and utilised by a discrete unit, which is what

happens in the large metropolitan municipalities, or whether it is used to fund other expenditure.

Ledger et al. (2021) highlight four key elements of the funding model. This includes universal access to services, cost recovery for operational expenses through service charges, subsidisation of free basic services for indigent households, and conditional grants for capital investment. One of the cornerstones of the White Paper's funding model post 1994 was that a municipality's own revenue would make up a large portion of the funding to deliver water and sanitation services. Municipalities therefore had to generate income through payment for services, including payments for rates and user charges. The White Paper was based on the assumption that "municipalities have sufficient revenue-raising powers to fund most of their expenditure … on average they finance 90% of their recurrent expenditure (operational or running costs) out of their own revenue, and in particular from property rates and user charges (for services)" (Ledger et al. 2021, p 28). Property tax and service charges (electricity, water, waste removal) would therefore fund service provision in terms of operational and running costs. The approach adopted in the White Paper (1998) was transferred to the current national fiscal framework, with the cornerstone of the financing of provision of service being the responsibility of municipalities through their revenue generation capabilities.

While the assumption made in the 1990s that municipalities could generate these finances, post-apartheid transformation, increasing poverty and inequality and informality, and in the case of eThekwini Municipality, rapid densification of traditional authority areas under dual governance, which comprise of 43% of the municipality, changing state citizen relationships and mundane forms of resistance and protest, have resulted in a situation where non-payment for services is increasing.

Given the need to prioritise transformation and redress in South Africa, particularly in terms of inequality in service provision, services needed to be affordable and accessible and support the goal of universal access. Access to affordable or free basic services have formed a fundamental part of the social wage in South Africa and hence affordability has to form part of the revenue equation. Ledger et al. (2021) argue that the White Paper (1998) did not acknowledge the inherent tensions or conflict in the discourses of municipalities raising their own revenue for the operational and maintenance costs of services and the pressure on them to provide affordable services. Municipalities had to price services to be both affordable and revenue generating, which is a challenge that eThekwini Municipality has had to address over the past 20 years, particularly given the declining number of residents as a proportion of the city's population who are paying for services. As Ledger et al. (2021) argue, this assumed "a point of convergence in tariff setting at which both goals could be met" or where income could cover expenditure. Tariff setting therefore had to address both the discourse of water as an economic good and water as a social good (Sutherland et al., 2014), which in Durban resulted in a discourse of spatially differentiated service provision.

One key challenge in establishing a fair and sustainable funding system is the difficulty in calculating and managing the cost of water provision. WSAs face numerous financial and operational hurdles, including fluctuating costs of bulk water procurement, ageing infrastructure requiring costly maintenance, the need for skilled personnel to manage water systems and disruptions to the water system. Additionally, expanding infrastructure to underserved communities, many of whom may struggle to pay, demands further investment. Corruption, mismanagement, and disasters, including droughts and floods, further strain limited resources, while climate change, rapid urbanisation, and pollution exacerbate water security and quality concerns. While these challenges are well documented (see Lebek et al., 2021; Ndlovu, 2021; Oskam et al., 2021; Scheba, 2021; Jewitt et al., 2020; Sutherland et al., 2014), solutions remain uncertain.

Funding is critical for sustaining water services. Currently, South African municipalities face high rates of non-revenue water, with water lost due to leaks, theft, or non-payment. This significant loss of both water and revenue undermines service reliability and quality. In response, WSAs are pursuing socio-technical transitions, acknowledging that traditional service delivery models are no longer viable and that water scarcity is a major factor to be addressed. However, achieving sustainable funding models within a context of reducing water demand will further strain finances, as decreased household consumption lowers revenue while additional funding is required to address water leakages and service delivery backlogs.

Ledger et al. (2021) state that while the provision of new water and sanitation infrastructure has been successful in South Africa and the maintenance of services has been reasonable, the critical issue to address, which is the focus of this study, is the ability of citizens to pay for services. With the increase in the number of indigent households in the country and the inability of people to pay for services, as well as citizen resistance in the face of poor services, entitlement to perceived rights or lack of citizen duty, there is a declining rates and service tax base. This has significant implications for the funding model developed for the provision of services. Cost of services is a critical issue at both the municipal and household scale, as municipalities cannot generate enough revenue to fund the provision of services, and citizens cannot afford to pay for them, or they divert money from paying for other household goods to service payments, for fear of being cut-off from the service.

What is evident in the literature and in reality, is that there are juxtaposed and multiple positions on payment for water services which range on a continuum from the upholding

of human rights (water as a social good), through limited payment for water services, to the neo-liberalisation of water (water as an economic good), namely full payment for water services by all. Stakeholders' responses mirror this, with positions in-between reflecting a context specific and realistic view of payment for water services. Hybridity in approaches to payment is sympathetic to human rights, high levels of poverty and inequality, the affordability of services, and an understanding of what you pay for is what you receive. What you receive is determined both by a recognition of human rights, but a neo-liberal position that holds that what you pay for determines your quality of service. Where a person lives in the city and their histories and geographies, play a significant role in determining access to services, type of services and quality of services. This is evident in eThekwini Municipality's spatially differentiated approach to service provision, which in turn impacts on payment for services. The majority of residents in low cost housing, township and suburban areas are willing to pay for water services, but in many cases struggle with affordability and do not want to pay for services that are not well delivered (low cost housing and townships). The public also upholds the position that people should pay for water services, as there are costs associated with delivering services, but that those who cannot afford to pay should be subsidised by the state. Households will prioritise payment for certain services, giving precedence to paying for electricity, food, schooling, transport and connectivity.

The initial research (literature reviews) showed that the following factors were important in understanding payment for water services: South Africa considers water to be both a social and economic good (water is a Constitutional right and a public good but it also has financial costs and needs to be paid for); water services need to be affordable; the country has reached a transition point in terms of payment for water services, reflected in the high levels of non-revenue water; the provision of reliable and good quality services impacts on payment for services; context (histories and geographies of places) matters and shapes -payment for water services; the quality of state-citizen relationships, including trust and faith in the state to provide and sustain water services to all; good governance that includes more participatory approaches to decision making. Payment for water services is not solely a financial or operational issue but is deeply intertwined with political, historical, spatial, economic, and social factors. Distinguishing between non-payment due to financial hardship, ideological opposition, personal choice, or land tenure ambiguity is difficult but essential. Ensuring that those who can pay contribute to the system is crucial for maintaining its financial viability and public perception of fairness. Without this, widespread non-payment risks undermine the sustainability of water services.

It is crucial to recognise that, while there is broad support for access, there is less agreement around what kind of service and how much free water should be provided. State approaches to these questions shape perceptions of the fairness of the system as a whole. Most respondents agree that poverty and affordability are key reasons why not everyone should pay for services. Underpinning the notion of affordability in South Africa is an understanding of the depth of poverty and inequality in the country. But what does affordability mean when it needs to be quantified in relation to who should pay for water services? Should it be measured against income and livelihoods, costs of food, costs of housing, costs of technology and access to a digital world, or costs of education and social enrichment? Or should it be measured in relation to quality of life and wider poverty, using settlement type, value of housing, or known marginalisation as proxies? And further, how should the state determine who is able to pay? Ledger et al., (2021) state that "efficient access can only be achieved when households are actually able to afford sufficient quantities of quality services". With 58% of South African households receiving free basic services, on paper as per the national budget, affordability, access and quality become entangled, as free basic services are provided at standard that is acceptable, but not of high quality. High levels of provision of free basic water can also undermine the sustainability of the service, if national funding for water services does not increase.

Paying attention to the conceptualisation and complexities of water and sanitation provision in the global south is also essential. To date, most analyses are framed within western-centric theory and approaches, even when case studies from the global south are included. The approach to understanding these challenges, therefore needs to be decolonised and contexualised. The complexities of issues related to water and sanitation provision, in this case, the payment for water services, are reduced to technical problems through the adoption of techno-managerial approaches, which do not always lead to appropriate outcomes. The historical and geographical processes and particularities of water and sanitation provision, and the payment for these services, in the global south, need to be understood if appropriate solutions are to be found.

The study identified six main reasons for non-payment for water services: a) inability to pay; b) low-income but with other priorities; c) belief that the model for payment is unfair; d) belief that the quality of service is insufficient and that withholding payment is justified and/or might improve service quality; e) short-sighted self-interest without direct consequence; and f) ambiguities in relation to communal tenure. The question of how water services should be funded is both challenging and contested and is the focus of this position paper.

2. Methodology

The study adopted a transdisciplinary (Td) research approach that focused on the co-production of knowledge and engagement with multiple actors (state, citizens, private sector and research institutions) in South Africa, with a

focus on eThekwini Municipality (Durban). Durban is a relevant and meaningful case study, given the city's water governance history and spatial structure. Rather than using a top-down, managerial and technocratic approach to solve the problem, the transdisciplinary research approach supports the contextualised co-production of knowledge and the co-engagement of multiple actors in finding sustainable solutions for payment for water services.

Qualitative research was conducted between May 2021 and August 2024. The research was disrupted by COVID-19, the social unrest in Durban and the 2022 floods, which had a major impact on water and sanitation infrastructure and services in the city. Four literature reviews were completed to identify and outline the legal, policy, economic, political and social dimensions of payment for water services. Five learning labs were held with senior management in eThekwini Water and Sanitation Unit. Additionally, interviews were conducted with 15 water governance specialists, surveys were undertaken in four different settlement types (low-income state-provided housing; peri-urban settlement on Ingonyama Trust Land; township; and middle-income suburb, 105 surveys referred to as the case studies survey) to understand how histories, geographies, socio-economic conditions, socio-technical relations and the quality of services provided, impact on payment for water services. In addition, the team was able to draw on a large household survey (500 surveys), that included a range of settlement types, representative of everyday life in eThekwini Municipality (referred to as the 'municipal-wide survey') and which asked questions about water services and water consumption in Durban, as well as survey data from research on water and sanitation service provision from 2016 to 2024 in low income, peri-urban and informal households.

2.1 Durban context

Durban, or the eThekwini Municipal Area (EMA), is located on South Africa's east coast in KwaZulu-Natal. It is the country's third-largest city, with 4.2 million residents and key economic sectors including finance, community services, logistics, and manufacturing. Despite economic activity, 42% of residents live in poverty, and 26% reside in informal settlements. However, Durban has been recognized for reducing poverty since 2011. The city is part of the Maputaland-Pondoland-Albany biodiversity hotspot, with significant natural capital protected under the Durban Metropolitan Open Space System (DMOSS). Its environmental assets include 18 major river catchments and 16 estuaries. Governance is shared between the eThekwini Municipality and 19 Traditional Councils covering 43% of the land area.

Durban follows a managerial governance approach to governance, where politicians and officials engage with the public through mechanisms like ward committees, customer service units, and participatory platforms for water and sanitation. Councillors hold substantial influence over decision-making, and residents respond through social protests, legal action, and resistance. A strong engineering sector supports municipal infrastructure, using technical expertise to shape policies and control development processes.

The municipality pioneered South Africa's free basic water program, initially providing 9,000 litres per household per month, later reduced to 6,000 litres due to drought. Informal settlements receive water via communal taps and ablution blocks, which is free, while peripheral areas under traditional governance access free water with minimal service charges, if they qualify for free basic water. Rapid densification in these areas, driven by affordability and rural-urban appeal, has altered Durban's urban landscape. However, increasing informality and financial strain threaten service sustainability, exacerbated by economic decline and COVID-19. By 2019, the eThekwini Water and Sanitation Unit stated that its current model was unsustainable, prompting a shift in water and sanitation strategies.

Communal ablution blocks, a mainstay of the provision of water and sanitation services in informal settlements are no longer affordable, and the use of waterless urine diversion dehydration toilets in the rural periphery are now considered to have reached their shelf life, largely due to extensive engagement with citizens on user satisfaction and the impact of emptying programmes. The municipality is therefore facing a socio-technical transition in water and sanitation provision, which includes how state-citizen relations are structured, or how social compacts are formed around the payment of services.

Water services in eThekwini are spatially differentiated. While a centralised water network supplies the city, infrastructure, pressure, availability, and costs vary by location. Residents in the urban core benefit from full-pressure metered water, while rural areas rely on limited metered supplies, water trucks, and dry sanitation systems. Full-pressure domestic users in homes valued below R350,000 receive 6,000 litres of free water monthly. Those in non-cadastral peri-urban areas or informal settlements receive free water through standpipes or limited flow taps. Rising block tariffs apply to higher-value properties, with some households eligible for subsidies based on need.

To ensure affordability, eThekwini Municipality offers multiple service levels: full-pressure metered supply, semi-pressure supply via roof tanks, individual household supplies with daily water limits, standpipes for informal communities, water sachets during disruptions, and boreholes where reticulation is absent. The high cost of extending services to the periphery is influenced by rapid urbanisation, steep topography, and low-density settlements. The evolving water provision model reflects Durban's historical, geographical, and political complexities.

eThekwini Municipality has developed a spatially differentiated approach to service provision (Sutherland et al., 2014). Water is provided across eThekwini through

a centralised water network, supported by water tankers where pipes are damaged or are not present. The quality of the water is the same across the municipality. What varies spatially is the infrastructure used to provide water, the water pressure, the volume of available water, proximity of available water to the household and the cost of water (Sutherland et al., 2014). In 2000, eThekwini Municipality's Water and Sanitation Unit (EWS) made the decision to provide a basic level of services to all (universal access to basic services), through their spatially differentiated service provision model (Sutherland et al., 2014). Rather than incrementally providing services out to the periphery of the city, EWS chose to provide a basic level of services to all, for ethical, social, financial and health reasons. The cost, resource, and engineering implications of upgrading water services spatially and incrementally across the eThekwini Municipal Area limited what was possible in terms of service provision (Odili and Sutherland, 2022; Sutherland et al., 2014; Gounden at al., 2006). As a result, eThekwini Municipality continues to have a spatially differentiated service provision model, where citizens in the urban core receive a higher level of service as a result of being within the waterborne sewerage network and having access to full pressure metered water. Citizens who live beyond the Urban Development Line (UDL) in the rural periphery, have access to metered water, free basic water through municipal provide ground tanks, water from water trucks, and urine diversion dehydration toilets, pit latrines, or self-installed flush toilets. The management of grey water is a challenge in the rural periphery due to the dry sanitation system (Odili and Sutherland, 2022; Sutherland et al., 2014). The inequality in service provision, with basic services falling under the category of free basic services, shapes and complicates the model used for payment for water services.

In eThekwini, full pressure domestic customers living in households below R350 000 receive the first 6,000 litres of water free of charge, per month, as part of the city's free basic water policy. This includes residents in the peri-urban periphery in non-cadastral areas on Ingonyama Trust land, who have access to water through ground tanks and live in households less than 50 m^2, and all semi-pressure domestic customers. All water supplied via standpipes or via a relevant flow limiter connected to a yard tap is provided free of charge. This applies mainly to water provided in informal settlements. Rising block tariffs are applicable to those who live in properties valued at above R350 000, with water use measured using household water meters, with revenue collected each month by the municipality. Customers receiving a semi-pressure supply have reduced rates above the free basic water allowance. Those whose properties fall between R350 000 and R600 000 can motivate to obtain free basic water based on need.

Levels of services available to make: water available to customers at an affordable cost, various levels of service are offered to domestic customers

- Full pressure metered water supply fed directly to the household from the City's supply network.
- Semi pressure supply received by the household via a roof-tank.
- 200 litres of free basic water per household per day available via an individual household supply (municipal ground tank) or a metered flow limiter connected to a yard tap for indigent households.
- Standpipes/water dispensers/communal ablution block taps and showers that are provided to supply informal communities as part of incremental water services
- Water sachets or tankered water in the case of prolonged service interruptions
- Water boreholes where there is no water reticulation

These differences are technical, economic and political choices, shaped by history and geography. Water provision differed across the colonial, apartheid and post-apartheid eras. The municipal water system has been developed in the context of the expansion of the municipal land area to include areas under dual governance. The cost of providing water services to the periphery increases due to rapid urbanisation, steep topography and low-density on the urban periphery (Sim et al., 2016; Sutherland et al., 2014; Gounden et al., 2005).

3. Reasons for non-payment for water services

The surveys conducted in households (both the municipality-wide and case studies survey) provided insights on citizen's response to water provision and payment for water services. When asked why South Africa and Durban experience water scarcity, household members stated that environmental degradation (77%) was resulting in water scarcity, that the state was responsible (72%), which implies lack of access to water services is due to poor water governance and management by the state. There is notable awareness of the impacts of climate change and droughts on water availability (62%). Most residents feel a moral obligation to use water well and not waste it. In other words, people both recognise the challenges of water provision and argue that the state must find a way to provide water, despite hydrological and ecological change, and they must ensure residents use water more responsibly.

Six reasons emerged from the study to explain high levels of non-payment for water.

3.1 Inability to pay

There is both legal and moral support for the right to water in South Africa, and in eThekwini specifically. The municipality-wide survey showed that the vast majority of respondents believe water should be available to all in the city (95%). Addressing this, therefore, means either increasing incomes (through work or cash transfers) or providing free water (as part of the social wage).

Given the scope of this report and challenges of job-shedding growth and the increasing informalisation of work, we largely leave aside the first option (increasing incomes), but do note that there are important ongoing conversations around the relationship between free services, cash transfers and real household income (Lawhon and McCreary 2023). In some places with reliable services, these debates may be largely symbolic: whether funds are used to increase social grants or reduce the cost of services might well provide the same net financial impact on states and households.

But in places with irregular services, and where the ability to pay for and make decisions about service level (and have income for accessing alternatives when disruptions occur), whether to improve livelihoods through cash grants or more free/subsidises services is a crucial consideration for national government and various groups lobbying for welfare improvements. For as both our data and the wider literature shows (Ledger, 2021; Cirolia and Robbins, 2019), municipalities focus services and maintenance on areas with paying customers. As a result, water services to poor areas deteriorate. In our research, municipal officials suggested non-payment for water services undermines both the quality of service provided and the rationale for a lower level of services. Residents feel that since they do not pay for water, they cannot demand a higher quality service and so are more likely to accept mediocre service provision. More generally, the ability to withdraw payments for inadequate service provision, and the ability to provide supplemental infrastructure in times of disruption, are benefits of having income rather than free services.

Here, it is also crucial to note an important, but quite specific example for why some households are unable to pay: when a resident moves into a new home that has existing water-related debt. This issue was raised by residents in townships and low cost housing projects, where the sale and transfer of properties is not regulated and does not take place within formal administrative and legal systems. New homeowners or tenants cannot pay for services when a large historical debt has been passed on to them. They need to negotiate this clearance of debt in a context where the transfer of municipal service bills and settling of debt is not linked to a formal sales process. There is a need for the municipality to develop a response to this hybrid system with its different sets of norms and rules, enabling such households to clear a debt and transition to regular payments for current water services.

3.2 Low-income but with other priorities

Making water and water infrastructure free for those with other priorities enables people to spend money on other things. Just what this money will be spent on is not fully determinable, and it is left to individual households (and within households) to determine priorities. Data shows that residents prioritise paying different kinds of services because of the way non-payment is dealt with. (see Figure 2). Specifically, electricity is understood to be a basic need that people must pay for in order to access, and therefore they prioritise paying for electricity over water (because water can still be accessed if not paid for). The alternative to not having electricity in a household, is costly, as households then purchase other forms of energy. Water can be more easily accessed by diverting water from water pipelines, collecting water in rivers, or borrowing water from neighbours. Access to housing for the urban poor is also not guaranteed by the state, and both low and middle income households report they prioritise paying for housing over paying for water, which they know they can still access, should they not pay for it.

Whether the state should pursue payments from this group is fundamentally an ethical and political question, entangled with whether the state can generate sufficient financial resources to provide services for free. As above, there are ongoing debates over what kind of service should be provided, and answers to this question shape perceptions of fairness. Public disagreement over the precise answers to this can be found in the data.

3.3 Belief that the existing structure of payment is unfair

Residents' views varied significantly in terms of who should pay for water. Disagreements over what a fair system entails, and what is economically viable, are unlikely to be fully resolved, but are, to some extent, potentially surmountable through trust-building processes which might help generate greater support for and legitimacy of existing or new practices. The study proposed that building social compacts between citizens and the state, co-producing knowledge and practices on payment for services and renegotiating the terms of what it means to be a developmental state and a citizen needs to take place.

Responses varied across settlement types. Just under one third of respondents in the low cost housing and peri-urban settlements (30%) stated that no one should pay for water, and 40% in low cost housing projects and 20% in peri-urban areas stated that some people should pay for services. Township residents (43%) stated that some people should pay for water. In both township and suburban areas, 40% of residents stated that all people should pay for water, with 27% in low cost housing projects and 33% in peri-urban areas stating that all people should pay for water services. Averaged across the sites, the findings suggest considerable differences, with 34% stating that all people should pay for services, 37% stating that some should pay for services, 18% stating nobody should pay for services and 10% not

responding. There is greater agreement in our data from water sector specialists and municipal officials. This may be because they largely adopt the position of state policy, and also because the method differed here (focus groups often result in a group response that many agree with). Here, all participants agreed that water is a basic human right and that that the poor should get free basic water. Crucially for what follows, they disagreed on who qualifies as 'unable to pay', a point that resonates with the distinctions made above.

Key questions that remain points of debate include:

- Who should get water and water infrastructure for free?
- What kind of service should be provided?
- How much water should be given for free?
    - Difficult to determine household sizes (include backyard dwellings)
    - How much water comes from various sources (e.g. piped water, rivers, boreholes, rainwater tanks, etc; access to these are socially, spatially and economically differentiated, as many households do not have access to safe water, while others can supplement more easily)
    - What kinds of social practices and technology can or might mediate this amount (e.g. domestic water reuse and recycling; norms about hygiene; these too are socially, spatially and economically differentiated)

3.4 Belief that the quality of service is insufficient and that withholding payment is justified and might improve service quality

A lack of trust in the state and the failure of the state to maintain infrastructure and provide reliable services, is undermining its ability to collect revenue from customers and is eroding their willingness to pay.

Water and water infrastructure are not like many other goods which people purchase. People tend to have multiple options when purchasing, for example, food or clothing. If the food is determined to be of low quality, they will likely shop elsewhere. Quite simply, this tends not to be the case for urban infrastructure. There is only one supplier, and few options if the service quality is deemed inadequate. That said: some people, and particularly high(er) income people in South Africa are seeking to supplement state-provided services with private 'off-grid' options, or even be fully off-grid. Whether states ought to support these shifts 'off-grid' or not, and whether this is more viable and ecologically beneficial for electricity, sanitation, or water, remain important unfolding debates.

Non-payment in relation to service quality creates difficulties for the state. Services can, in theory, be cut off for non-payment. This is politically difficult, particularly in democratic states that rely on voters and when these users are seen as having legitimate cause for withholding payments. Water is a human right in South Africa, upheld by the Constitution. In the case of non-payment, the state can cut off water services or install a flow limiter. This may prompt those who can afford it to pay for services, but for those who cannot afford to pay, this is not an option, given the human rights and political consequences.

This is why some users perhaps rightfully believe that withholding payments might mobilise the state to improve services, particularly in high-income areas (which tend to already have better services). States tend to react to this withholding (or threat of withholding) through action to redress service quality. This response is not uncontroversial, however. It results in unequal and unsystematic improvements. In other words, service improvements are no longer done in a strategic way that prioritised areas with the highest need, but instead respond to particular places with payments being withheld. This is a particularly troubling dynamic when many of the parts of the municipality with the lowest quality and reliability are in places that do not pay for services. Users in such areas, thus, have fewer types of recourse: they cannot withhold payments because they do not pay for services. They also tend to lack resources to pursue off-grid options (see 3.1 above).

3.5 Short-sighted self-interest without direct consequence

This section attempts to explain those who benefit from the provision of water services and can pay for them, but make a decision not to pay. It can be very difficult to separate this category from the other reasons described above. Our research did not directly ask this question, in part because surely few would voluntarily admit that they receive a good and reliable service and are able to pay for water services, but do not pay for it because they have not directly experienced negative consequences for non-payment.

Nonetheless, we include it here because it appears to be a widespread belief amongst municipal officials. Municipal officials, in particular, are concerned that many who can pay for basic services are hiding behind those who cannot. This is particularly true in mixed-income parts of the city. How these households might be identified is undoubtedly both important and a challenge for the city. More research is needed to both understand the rationale for this and to help citizens see that this practice threatens the financial viability of the whole system. Despite uncertainties, it is important to differentiate this reason from the reasons above and below.

3.6 Ambiguities in relation to communal tenure

This reason is perhaps more prevalent in eThekwini than in many other South African municipalities because of the relationship between traditional authority and municipal administration. Nonetheless, given its significance and associated political difficulties, it is perhaps the most important and challenging issue to address.

The provision of free basic water in eThekwini, falls

mainly in settlements located on Ingonyama Trust land in the periphery, which is governed by both eThekwini Municipality and traditional authorities and in informal settlements. Areas under traditional authority governance make up 43% of the municipalities land area and are rapidly densifying. Many middle and high income urban and rural residents are moving to these areas in the city, but are able to avoid paying for water services as households do not pay rates and taxes in these areas (Sim et al., 2016; Sim et al., 2019; Sim et al., 2018). The structure for payments for water services here varies considerably, with some households having metres and others access to ground tanks that provide free basic water, but many believe there is a tacit agreement that they will not need to pay for water services. This is producing a new urban landscape, with both the wealthy and the poor gaining access to free water services. A new approach to payment for water services is required in these rapidly developing areas.

Until the governance and roles, responsibilities of all stakeholders in these spaces are negotiated, debated and resolved, it will be very challenging to develop a system of payment for water services on traditional authority land. National Treasury has attempted to broker a solution and a flat rate for rates and taxes and service provision has been suggested, but this will be contested until a uniform standard of services that are reliable are provided to these areas. The mapping of cadastral boundaries has been attempted by eThekwini Water and Sanitation using polygons on remote sensing images, but many of the areas in the urban periphery are rapidly developing and so even this process is not able to keep up with real time changes. The relationship between the city and the traditional authority can be strained, as a result of confusion over authority and governance in the areas of shared jurisdiction. The economic viability of the whole municipal water system, and the ability to continue maintaining infrastructure and providing services, as well as public faith in the fairness of the payment system rely on redressing this inequality.

Conclusion

This paper recognises the difficult position of the state in relation to the provision of water services. The municipality needs to build residents' trust by ensuring that the water supply is reliable, but it is difficult to do so without sufficient funding. In the context of existing structural poverty, South African municipalities like eThekwini cannot resolve economic challenges associated with water services by creating responsible citizens who fully cover the cost of their own infrastructure. Without broader changes, some people simply cannot afford water services, and lack of water services causes unacceptable social and ecological consequences. Yet at present, without more funding, the quality of the service is declining as the state cannot expand or maintain the networks and operations for water service provision. This decline is not uniform: there are notable differences between water systems across settlement types, reflecting the inequalities of the past and the failure of transformation in the present. This is pattern is becoming increasingly evident as a generation of capital investment has not taken place, resulting in the water provision system reaching a tipping point.

We can see four broad potential responses here.

The first is that citizens want certainty, transparency and clarity on how water service provision works and is implemented, and they also want this system to be fair. This relates to clear communication by the state, and engagement with citizens, about what the social contract is around water service provision at the national and local scale. It also means that the instruments used to manage the provision and payment for water services (bills, water meters, flow restrictors, tariffs) are transparent, well managed, working and evident. Citizens have raised the issue of meters not working, of incorrect billing, of not obtaining bills and of the state not maintaining water services and providing a reliable water supply, while still continuing to charge customers for the service.

The second is around continuing to provide heterogeneous services and investing in technological alternatives. Water service provision is provided through centralised modernist systems, which do not reach all citizens equally; the state may not be able to provide this service to all households. Yet water is also accessed through natural water bodies and rainfall, and water tankers and water sachets providing water where infrastructure is not functioning for long periods of time or is absent. Water costs can be reduced through water capture and reuse, which can be reduced by low-cost technologies. This can crucially reduce pressure on state services, reducing the need for expensive investments in increasing water supply. Reflecting on a balance between large scale centralised solutions and locally developed approaches, and how these different approaches could be financed needs to be considered. This also requires reconsidering economic models to ensure that sufficient revenue is collected if the volumes of water consumed are reduced (see extensive discussion of this in Cape Town in terms of the drought). This is happening in terms of sanitation provision in eThekwini, as well as in catchment rehabilitation projects and so learnings from these sectors could be translated into water service provision.

Third, the current model which differentiates between free basic water and a tariff system, can work in principle, but the nuances and complexities of applying this model in practice needs greater engagement and reflection, as this report has shown, due to its complexity in reality. In the long run, it is worth continuing to reflect on the political and economic difficulty for the state of ensuring the reliable and sustainable provision of services to areas that cannot pay for them. While the right to water is widely supported, there may be ways of supporting the right to water while also, for example, increasing cash transfers that enable a greater

percentage of households to pay for water. This might not directly change revenues for states and citizens (i.e. it is a shift in subsidising water towards more cash), but doing so opens possibilities for reducing the unequal responses to service maintenance and provision in particular settlement types. It might also enable more residents to access water during the increasingly frequent disruptions.

Fourth, the state must ensure that payments are made by those who are able to afford them. Finding the lines here is difficult, and can only be done through monitoring and consultation. Nonetheless, this cannot always rely on consent, for some areas that have a history of non-payment will be unlikely to voluntarily agree to start paying for water services from the state. However, dialogues, such as the water dialogues run by eThekwini Water and Sanitation in the past can be pivotal, as citizens need to recognise their responsibility to the municipality and its sustainability, and the impact on the poor, when they can pay for water services. Ensuring more equitable and high quality water provision particularly in peri-urban areas, and clear communication, is likely to increase consent. There will also need to be considerations for historical debts, particularly when there is turnover of residents. But a system of payments and enforcement of this is likely to be necessary.

Most significantly, citizens must see that the payments they make are used to improve the quality of service both for themselves and across the municipality. Achieving this means both more action by the eThekwini Water and Sanitation Unit to improve services, and developing better trust and communication. The successful and sustainable provision of water services by a state entity requires a shared understanding of a social contract. This social contract is different from a typical business arrangement, for it includes the subsidisation of those who cannot afford to pay for water on their own. Crucially, funding must come from somewhere, and those able to pay must see that their payments are being well-used, ensuring water services both for themselves and across the municipality.

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