

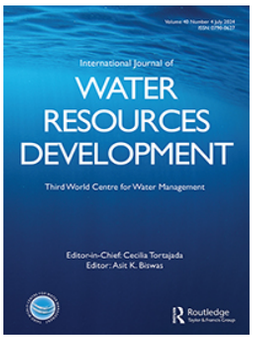
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Barbara Van Koppen; Patience Mukuyu; Tumai Murombo; Inga Jacobs-Mata; Jennifer Molwantwa ...

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International Journal of Water Resources Development

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/cijw20

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To cite this article: Barbara van Koppen, Patience Mukuyu, Tumai Murombo, Inga Jacobs-Mata, Jennifer Molwantwa, John Dini, Tendai Sawunyama, Barbara Schreiner & Sipho Skosana (2024) Principles and legal tools for equitable water resource allocation: prioritization in South Africa, International Journal of Water Resources Development, 40:4, 555-577, DOI: 10.1080/07900627.2023.2290522

To link to this article: https://doi.org/10.1080/07900627.2023.2290522

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Published online: 17 Jan 2024.

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INTERNATIONAL JOURNAL OF WATER RESOURCES DEVELOPMENT
2024, VOL. 40, NO. 4, 555–577
https://doi.org/10.1080/07900627.2023.2290522

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Principles and legal tools for equitable water resource allocation: prioritization in South Africa

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ABSTRACT

South Africa's legally binding National Water Resource Strategy specifies a people-oriented prioritization for the equitable allocation of the nation's public trust of surface and groundwater resources. This article analyses how the Inkomati–Usuthu Catchment Management Agency seeks to operationalize the three highest priorities in the Sabie Sub Catchment: the Basic Human Needs Reserve for domestic and constitutionally based productive water uses; customary water tenure in former homelands prioritized over the upstream commercial forestry and large-scale farming and the downstream Kruger National Park; and priority General Authorizations overcoming administrative injustices of current licensing. These highest priorities imply curtailment of the lowest priority, high-impact economic uses.

ARTICLE HISTORY
Received 31 March 2023
Accepted 28 November 2023

KEYWORDS
Equitable allocation; prioritization; water law; South Africa; reserve; customary water tenure

Introduction

Equitable water resource allocation

Equitable water resource allocation has hardly been operationalized as yet into actionable principles and tools by governments as custodians of their nations' water resources (Murombo, 2022). In low- and middle-income countries, a major challenge for equitable allocation is to level the playing field between small pockets of formal water economies and the informal water economies of the majority of citizens, including indigenous peoples (Shah, 2016). Formal water economies in these countries include public water facilities in urban areas, the gradually expanding rural domestic supplies, wastewater treatment plants, government irrigation schemes, hydropower, and few foreign and national high-impact corporate sector water users, such as agribusiness, mines or the

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tourist industry. In contrast, most citizens in rural and even peri-urban areas depend on informal self-supply largely outside the ambit of the state. Self-supply meets their multiple needs, including domestic uses, livestock watering, small-scale agricultural water uses, brick-making, small-scale enterprises, other productive uses and cultural uses. Individual households or self-organized subgroups plan, design, finance, construct, operate and maintain the wells, lifting devices or gravity systems. Self-supply keeps expanding, not only as farmer-led irrigation (Giordano et al., 2012; Izzi et al., 2021) but also to meet domestic water needs in the absence of public services, or as fallback when services are unreliable (Sutton, 2021). Expansion is especially enabled by newly available and affordable technologies and energy sources.

In many rural areas, age-old customary normative frameworks continue shaping both these investments in infrastructure and the 'sharing in' of the naturally available surface and groundwater resources within communities' socially defined territories that feed into the infrastructure. Customary norms also shape the 'sharing out' of these streams and aquifers between a community and neighbouring communities using the same sources (Komakech, 2013; Ramazzotti, 1996; Van Koppen, 2022). However, in the 'sharing out' of surface and groundwater resources flowing over and under the customarily governed territories with third parties that belong to the formal water economies, equitable sharing has hardly been operationalized as yet in an actionable manner. The parameters for equity of existing policy and legal frameworks remain abstract.

Concrete principles and tools for practical action for equitable water allocation are most needed under competition for finite water resources, so during the dry season and droughts or longer periods, and when all realistic options to invest in more storage and other supply augmentation are exhausted. Inevitably, under such competition, some will be winners and others will be losers, if not now, then in the future. Governments are pivotal in setting principles and translating these into enforceable rules to regulate this competition in order to achieve constitutional and other national goals.

Unfortunately, current statutory water law in most African and Latin American countries tends to be based on permitting or other written agreements, in official language, and only defendable in expensive courts, largely inaccessible to the majority of water users (Burchi, 2019; Schreiner & van Koppen, 2018). The latter are hardly even aware of any statutory water law. Water legislation may address competition among users by ranking priorities in terms of monolithic sectors, prioritizing domestic uses, followed by agriculture, industry, environment and other in any sequence. However, this ignores inequalities within sectors, which can be deep. It also ignores that people need water for domestic and highly diverse productive uses, certainly in rural areas. Water resource allocation is further complicated in low- and middle-income countries where governments are resource-strapped and have to allocate water without in-depth modelling, remote sensing, ground-truthing and regular monitoring of highly variable water resource availability from local to national scales. Their resources to regulate, enforce and mediate in conflicts about water resource allocation are even scarcer. In this situation, formalization through administrative permits (Van Koppen & Schreiner, 2018) or investment contracts (Bosch and Gupta 2022) cannot avoid that the nation's water resources are open access for grabbing by the most powerful with most land and the deepest boreholes or other sophisticated storage and conveyance infrastructure.

Hence, the challenge for equitable sharing of water resources is to define principles that enable affordable and transparent action. These need to fully recognize the

widespread self-supply in informal water economies, alongside the formal water economies, and to be widely respected as legitimate contributions to constitutional and other national goals. The operationalization of these principles into legal tools should be defendable in the courts. (Although the safeguarding of water quality, the other key state responsibility, is closely related to water resource availability for human use and the environment, this is beyond the scope of this article.)

In seeking to address these challenges, this article distinguishes between water infrastructure and the water resources that flow into any infrastructure, whether individually or collectively managed self-supply or public infrastructure. In low- and middle-income countries, infrastructure is often the limiting factor for all uses beyond the few direct uses of surface waters such as fisheries, navigation or recreation. Storage, which ranges from soil moisture retention to large dams, renders more water resources available for human use during longer periods of the year, or year-round and is the vital buffer during the dry season, droughts or dry spells, besides protecting against flooding. Conveyance infrastructure diverts surface streams or lifts water from aquifers, the planet's largest fluid storage, to ensure that water resources become available to the users when and where needed. Evidently, infrastructure is only useful if there are water resources to flow into it; both are needed.

This distinction is not always fully recognized in the literature. For example, the human right to water for domestic uses, as the United Nations (UN) adopted in 2010 (UN, 2010), is a right to *infrastructure* to ensure year-round and reliable availability and limited distance to homesteads. Implicitly, the relatively small water volumes to flow into infrastructure are assumed to be available as well. Yet, during the dry season and droughts, severe upstream–downstream competition or aquifer depletion may deprive the most vulnerable people even from these minimum water resource volumes.

Without denying this essential role of infrastructure, this article focuses on the challenge of the equitable sharing of water resources in low- and middle-income countries. We ask the question: Which legitimate, actionable and affordable principles, legal tools, and practices can be defined and enforced to ensure that the water resources that flow in infrastructure, including the majority's self-supply for multiple uses in informal economies, are equitably shared to achieve constitutional and other national goals? Answers to this question are emerging in South Africa: legally binding equitable prioritization.

Aim, method and structure of this article

The aim of this article is to explore how prioritization, as adopted in South Africa's legally binding National Water Resource Strategy (Department of Water Affairs, 2013), operationalizes an equitable allocation of surface and groundwater resources in intersecting formal and informal water economies, according to the post-apartheid Constitution (Republic of South Africa (RSA), 1996) and National Water Act (1998) (RSA, 1998). In this prioritization among human uses, the highest priorities are accorded to basic human needs for both domestic and water uses that contribute to poverty eradication, livelihoods, and gender and racial equity. The lowest priority are large-scale economic uses, including commercial agribusiness and forestry (Department of Water Affairs, 2013).

The Inkomati–Usuthu Catchment Management Agency is most advanced in pioneering the further specification and implementation of these priorities in the Inkomati Catchment in the north-east of South Africa. According to the National Water Act, catchment management

agencies are responsible to define contextualized principles for water allocation through participatory processes and to put those into action, culminating in a catchment management strategy and sub-catchment water allocation plans. In these locally relevant plans, catchment management agencies can interpret and translate national prescripts, such as the prioritization, and existing legal tools (the Reserve; *de minimis* Schedule One uses; General Authorizations of somewhat larger scale uses than Schedule One, licences and existing lawful uses – ELU). They can also include new interpretations. The draft Water Allocation Plan of the highly inequitable Sabie Sub Catchment includes such innovations.

A study was conducted of three ways in which this draft Water Allocation Plan seeks to empower the historically disadvantaged individuals as high-priority users bottom-up. The method included an extensive literature review, interviews with relevant national and catchment-level water authorities, and field research in the former homelands of the Sabie Sub Catchment from 2019 to 2022.

In presenting the findings, we start with the national context in which prioritization emerged to realize the redress of the deep inequities of the past. This is followed by a description of the widening inequalities in the Inkomati Catchment in general and the Sabie Sub Catchment in particular. Three innovative operationalizations are discussed. The third section discusses the highest priority, the Reserve, indicating how the new interpretation also addresses earlier bottlenecks in conceptualizing and enforcing both the ecological and basic human needs components of the Reserve. The fourth section introduces an aspect that has hardly received attention in South Africa as yet, unlike elsewhere in the world: the prioritization of customary water tenure, in the former homelands, both as pre-1998 ELU and post-1998 water uptake governed by customary normative frameworks (Murombo, 2022). The third element of the draft Water Allocation Plan is discussed in the fifth section: an intent to frame General Authorizations in a way that ends administrative injustices of small- and medium-scale Black users.

Empowerment bottom-up under growing competition implies that the low priority users, who are relatively few high-impact users who over-use the shared, scarce national treasure of nature's waters, are to be regulated and curtailed. Scarce government staff should target its scarce human resources to such curtailment (Pegasys Institute, 2018; Schreiner & van Koppen, 2018). Many measures are required and partly already undertaken to that end, for example, to stop massive lawful and illegal post-1998 water uptake by these lowest priority users, to enforce strict due process in licence applications by low priority users, ensuring no one becomes harmed, and to avoid the risk that the conversion of pre-1998 ELU into licences become an administrative water grab (Méndez-Barrientos et al., 2018; Murombo, 2022; Peters & Woodhouse, 2019; Van Koppen & Schreiner, 2015). However, regulation and curtailment of low priority users is beyond the scope of this article.

Lessons learnt in South Africa about legally binding prioritization that is in line with the constitution and national goals can be relevant in other low- and middle-income countries with similar formalized water economies of a minority, and significant numbers of informal or indigenous smaller scale water users. Where storage infrastructure development is still limited, competition during droughts is even stronger. In the many African countries with permitting as the main formal entitlement, permits remain useful to regulate the few formalized users. Prioritization can provide practical entitlements of the informal majorities, if not already now, then in the future of more competition during longer and less predictable droughts.

National and catchment context

Actionable principles and tools in South Africa

When apartheid in South Africa ended in 1994, racial and gender equity and historical justice were firmly enshrined in the Constitution (RSA, 1996) and the National Water Act. In most parts of South Africa, competition for scarce water resources had already become fierce. The White minority, who under colonialism and apartheid had appropriated 87% of the land with the appurtenant water resources, had developed infrastructure and controlled most water resources (Méndez-Barrientos et al., 2018). By 1994, hardly any Black individual had a formal water resource right, not even for just basic needs. Homelands were created for Black ethnic groups, who comprised the majority of the population, on the remaining 13% of South Africa's area. These congested former homelands continue to be home to 18 million Black people, almost one-third of citizens, including the most vulnerable.

With the National Water Act, the new government became the custodian of all surface and groundwater resources in the country. New legal tools were defined. The Act introduces a Reserve, consisting of an Ecological and a Basic Human Needs Reserve (section 16–18, NWA). All uses that took place in the two years before 1998 and that were lawful under the racist apartheid legislation or other law, were allowed to continue as ELU, with the intention to convert these old order rights into new order entitlements to use water, in the form of licences regulated under the National Water Act. For water uptake post-1998, the National Water Act prescribes licence application processes. Licences (or permits, as they are called elsewhere) are a use right of limited duration and can be regularly revised, with conditions as locally relevant, for example, a limited assurance of supply, caps to volumes, wastewater regulation, and payment of the water resource management charge. Uptake of very small *de minimis* quantities, called Schedule One in South Africa, is exempted from the requirement to obtain a licence. General Authorizations are exemptions of larger volumes, over a larger water management area.

After over a decade of implementing licensing as the primary legal tool, various problems surfaced. The Department of Water Affairs, in its legally binding National Water Resource Strategy – 2nd Edition (NWRS-2) (Department of Water Affairs, 2013), realized that the top-down formalization of productive water uses through licensing or exemptions to licensing risked even further widening inequities and aggravating historical injustice, stating: 'Current processes are often costly, very lengthy, bureaucratic and inaccessible to many South Africans' (p. 48). The 'many South Africans' for whom licensing is inaccessible are mainly the small- and medium-scale Black water users across the country, managing water mainly through self-supply in informal water economies. By obliging small-scale users, many of whom hardly speak English and may be semi-literate, to apply for a process that the Department of Water Affairs admits is impossible to administer, these users are formally criminalized for doing nothing other than using their own means to realize their constitutionally enshrined human right of access to sufficient water and food and national goals of racial and gender equality. Moreover, for small- and even medium-scale users the cumbersome and costly bureaucratic application efforts are disproportionate to the water volumes abstracted, if not simply unaffordable.

When the eligibility for irrigation subsidies is tied to formal licences, informal users are discriminated in that way as well.

Moreover, Schedule One uses, which provide a lifeline for the most vulnerable micro-scale users, are exempted from the obligation to apply for a licence. However, under competition for water resources, this legal status is weak indeed. In water resource planning and allocation, they remain invisible or they are dubbed as 'negligible'. Lastly, even though the Constitution recognizes customary law, the legal status of the collectively held customary water rights in former homelands had received limited academic attention only (Murombo, 2022).

In contrast, large-scale farmers and other high-impact formal users not only consolidated their old order rights but also disproportionately expanded water uptake post-1998 (Méndez-Barrientos et al., 2018; Van Koppen & Schreiner, 2015). As a result, the current use of licensing and exemptions as the primary instruments of the National Water Act, unintendedly, widened historical injustices instead of narrowing and even infringes on the Constitutional right to administrative justice (RSA, 1996, section 33).

These continuing inequalities contradict the goals of promoting equitable access to water and redressing the results of past racial and gender discrimination in the National Water Act. This drew attention to the commitment in the NWRS-2 of a legally binding, actionable prioritization of water resource allocation which defines winners and, inevitably, losers under competition for limited water resources. This concerns both average volumes and getting water first before others can take it. Users with the lowest priority are the first to be curtailed when water resources dry up.

The order of prioritization is as follows (Department of Water Affairs, 2013):

(1) Reserve, consisting of the Ecological Reserve and Basic Human Needs Reserve.
(2) International obligations (which are hardly further discussed in this article).
(3) Water resources that contribute to poverty eradication, livelihoods (typically small scale) and racial and gender equity (which can be medium scale).
(4) Strategic uses (mainly cooling of power plants, and not further discussed in this article).
(5) Licenced uses for general economic purposes, such as large-scale commercial irrigation, forestry, mining and industries, using high volumes and seriously polluting, so with high impacts on other water users and the Ecological Reserve. This includes the conversion of old-order ELU of White, high-impact water users into licences.

In this prioritization, equitable water resource allocation is aligned with constitutional and other national goals of equity, in any specific local context of competition for shared water resources. It makes transparent who the inevitable winners and losers are, as long as there is no supply augmentation. Prioritization is practical as it is about relative importance, in a sense like pair-wise ranking on what is agreed as more equitable than the other.

Importantly, prioritization is valid when neither water authorities nor users know the precise volumes of variable water resources flowing over or below the lands in advance. Uncertainties about water resource availability remain, even with the most sophisticated historical monitoring of flows and precipitation, remote sensing of land uses and evaporation, well-tested operation rules for dams and drought-prediction

modelling, all with continuous ground-truthing. Uncertainties are further exacerbated under climate change. When resources dry up under such conditions, it is even more important to ensure that high priority uses are met first before the lower priority users can take whatever is left of the shared water resources. The lower priority users bear higher risks of nature's vagaries. For dam operation in South Africa, prioritization that deals with variability with winners and losers has been long since been institutionalized as an 'assurance of supply' according to priority classification systems, which include restriction rules of shorter or longer duration (Department of Water and Sanitation, 2018, 2021).

Perhaps even more importantly, prioritization enables a people-centred, transparent process that includes both the existing formal and informal water economies to define and forge legitimate consensus about priorities in line with constitutional and national goals. Transparent prioritization brings everyone around the table, irrespective of the degree of formalization, language spoken or degree of literacy. This is key for enforcement. Broadly agreed consensus enables high priority users to claim their legally binding volumes or shares of the water resources vis-à-vis lower priority users that infringe on their priority resource rights. Bottom-up pressure, backed by formal consensus, is indispensable in convincing and forcing lower priority users to adjust and maintaining good relations at the same time (Komakech, 2013; Méndez-Barrientos et al., 2018, p. 250). General obligations across any priorities, for example, safeguarding water quality, can still be set and enforced as relevant in any context. The Inkomati Catchment Management Strategy and the draft Water Allocation Plan of the Sabie Sub Catchment took this prioritization forward in the following context.

The Inkomati Catchment with the Sabie Sub Catchment

Historical inequalities continue to widen in the Inkomati Catchment as well. Quantitative data of 2213 registered users for the Inkomati–Usuthu Water Management Area show that 7% of the users, who each use more than 1 million m^3 per annum, take 83% of the total registered water volumes (1383.67 million m^3 per annum). In sharp contrast, the cumulative water uses by the 30% of the users who use less than 10,000 m^3 per annum is just 0.01% of the total registered volume (Van Koppen & Schreiner, 2018). Out of all registered users with pre-1998 ELU, 97% are White men. This legacy of the past continues in new water uptake. In the period between 2015 and March 2020, 180 applicants took up water use, either with a General Authorization or a licence, for a total volume of 197 million m^3 per annum. They continue to be dominated by White men in 66% of the cases, and only in 33% by Black men. Only 1% of registered users are (White) women (Inkomati–Usuthu Catchment Management Agency (IUCMA), 2021).

As elsewhere in South Africa, the overwhelming majority of rural water users are not registered at all, partly because they are supposed to fall under Schedule One uses. The aggregate volumes of this majority are disproportionately small. These inequalities are not exceptional. In the neighbouring Olifants basin, it was found that 1.2% of all rural water users, whether or not registered, use 95% of the water resources (Cullis & Van Koppen, 2007).

Within the Inkomati Catchment, the semi-arid Sabie Sub Catchment is one of the four sub-catchments of the Inkomati and the focus of this article. Its draft Water

Allocation Plan (IUCMA, 2022) concretizes the above-mentioned priorities of the NWRS-2. The sub-catchment is in serious deficit. High rainfall and abundant surface water resources in the steep mountainous areas upstream are taken up as so-called streamflow reduction activities with a legal status by large-scale commercial forestry (pine, eucalyptus, wattle) companies. Moving steeply down to the much drier low-lying areas, large-scale irrigation boards in former White areas abstract from the Sabie River up to the downstream Manyeleti and Sabie Sand Game Reserves, which merge with the Kruger National Park further downstream, before the Sabie flows into the Corumana Dam in Mozambique (Pollard & Cousins, 2008; Saraiva Okello et al., 2015).

In between upstream commercial forestry, various up- and downstream White irrigation boards and most downstream wild parks are the scattered and congested settlements of the former homelands of Lebowa and Gazankulu, which cover 20% of the Sabie Sub Catchment (Pollard & Cousins, 2008; Riddell et al., 2018). The apartheid government constructed and operated various government smallholder irrigation schemes, but these dilapidated or collapsed in the democratic era (Agterkamp, 2009; Pollard & Cousins, 2008). Some rehabilitation is taken up by the provincial Department of Agriculture and staff of the Kruger National Park (Riddell et al., 2018). Further rehabilitation is envisaged. The Department of Agriculture keeps highlighting the formalized water rights of these schemes to ensure water resources will be available when they function again. This is included in the Water Reconciliation Strategy, which estimates that schemes will be up and running again by 2025 (Department of Water and Sanitation, 2021). Self-supply is widespread for domestic uses, livestock watering and farmer-led irrigation that covers significant areas according to remote sensing (Magidi et al., 2021).

The River Sub System of the Sand, a tributary to the Sabie River, is most severely in deficit (Department of Water and Sanitation, 2018). For long, storage to increase the availability of surface water in the tributaries and in the stem of the Sand River has been limited to a few low-capacity dams. Since 2001, a new dam in the adjacent Sabie River Sub System, the Inyaka Dam, augments the yield of available water resources. The large Bushbuckridge Transfer Pipe transports part of the dam water to the neighbouring Sand River Sub System with the aim to finally meet even basic human needs for domestic uses of the growing populations in the former homelands – assuming there is functional reticulation.

However, the waters of the Inyaka Dam are also claimed by downstream White-dominated irrigation boards and the Kruger National Park and Sabie Sand Game Reserve, besides being claimed for the envisaged rehabilitation of the government smallholder irrigation schemes. Yet, the Water Reconciliation Strategy calculated that the water requirements for even just domestic uses in the Sand River Sub System, including the water yields from the Bushbuckridge Transfer Pipe, are already higher than the available resources at the usual 98% assurance of supply level (meaning that government can guarantee the availability of water in 98 out of 100 years). This assurance risks becoming lower in the future (Department of Water and Sanitation, 2018), even without considering the competing dam releases, are prescribed as the Environmental Water Requirements. Hence, the Ecological Reserve and lowest priority 5 users directly compete with basic priority 1 domestic supplies and priority 3 uses for poverty eradication and livelihoods.

The groundwater situation in the Sabie Sub Catchment is not well understood. Given the high variability of annual precipitation in the semi-arid sub-catchment, groundwater use is vital to buffer against droughts (Pollard & Cousins, 2008). In some areas groundwater is already overused, but in other areas groundwater is still available. However, in general, groundwater levels seem to be depleting (IUCMA, 2021).

We now turn to three ways in which the draft Water Allocation Plan of the Sabie Sub Catchment (IUCMA, 2022) seeks to operationalize the national prioritization to reduce these inequalities, starting with the highest priority.

Priority 1: The Reserve

Highest priority

The Reserve is the only 'right' to water in the National Water Act in the sense that it enjoys priority, whereas the use of water for all other purposes is subject to authorization or exemption (Department of Water Affairs and Forestry, 1997). The onus to determine, monitor and enforce the Reserve lies with the government. The Reserve must be met first, whatever water resources are available for next priorities. Hence, the determination of the Reserve is a condition for all further allocations. A 'Reserve' is the tool par excellence for protection of the core minimum water resources that are, unambiguously, recognized as a top priority under any condition.

The drafters of the Reserve were environmental experts who were well aware of the human right to sufficient water enshrined in section 27 of the Constitution (RSA, 1996). Accordingly, the Reserve has two components. The Ecological Reserve regards the quality and quantity of water required to protect aquatic ecosystems to secure the ecologically sustainable development and use of relevant water resources. The Basic Human Needs Reserve refers to the quality and quantity of water to satisfy basic human needs.

Environmental experts kept highlighting the importance of all that grows thanks to naturally available water resources for the livelihoods of poor people, also flagging how these livelihoods dimensions risked being overlooked (King & Pienaar, 2011). Further, Singh et al. (2011) noted that a standardized and meaningful approach to define and implement that Basic Human Needs Reserve was lacking. They also flagged that the Water Resource Planning section in the Department of Water and Sanitation should play a strong role, instead of vesting the mandate of both components of the Reserve exclusively with the Water Ecosystems section, as was practiced.

The draft Water Allocation Plan of the Sabie Sub Catchment takes these suggestions forward by proposing: 'Redefining the Basic Human Needs Reserve (BHNR) into high-priority core minimum water resource rights for basic domestic AND basic productive water needs, and enforcing this redefined all-inclusive BHNR' (IUCMA, 2022).

For this redefinition of the Basic Human Needs Reserve, the first step is to disentangle the relation between the Ecological and Basic Human Needs Reserve and stronger role of water resource planning in the latter. A key difference between both components is that the Ecological Reserve seeks to ensure that water resources stay *in* the source to ensure aquatic life and biodiversity, also for fisheries or aquatic plants for basic livelihoods. In contrast, most human uses, including uses to meet most basic human needs, imply taking water *out* with the help of infrastructure, even if just women's wheelbarrows to transport

containers to meet basic domestic needs at their homes. In this sense, competition between the Ecological Reserve and withdrawal for human uses is inevitable. This renders it even more important to prioritize who can still take water out: those who already deplete (or pollute) most water resources (low priority 5 high-impact users), or those who hardly take out any water, and whose basic human needs are at stake (priority 1 and 3 users)? As elaborated below, without such clarification, a narrative of the Ecological Reserve that favours 'pristine nature', supposedly represented by wild parks, competes with the Basic Human Needs Reserve in the Sabie Sub Catchment.

The second step is a redefinition of the Basic Human Needs Reserve itself.

Ecological Reserve

Assessments

The Ecological Reserve has a quantity and quality element. For the quantity, as described in detail at national level (King & Pienaar, 2011), and as also described for the Sand River Sub System (Agterkamp, 2009; Pollard & Cousins, 2008), the Ecological Reserve is operationalized as a proportion of the surface streams (Ecological Water Requirements for groundwater are still under development). This started as a simple desktop exercise to define a certain percentage of the – initially roughly estimated – mean annual runoff of surface water sources that should stay in the different parts of the main stem of the river system from upstream to downstream. Operation rules of the many dams would help ensure that sufficient flows would be released in the dry season as well.

Starting with a rough estimate of one-third of the mean annual runoff, environmental experts developed more sophisticated methods to assess annual runoffs, their means, their variability over the seasons to inform the determination of an Ecological Reserve. Resource quality objectives were also set. Scientists and water managers classified the various river stretches into A–F Ecological Categories. The highest class A is for surface waters in their natural state so without any 'modification' by humans (assuming that is still possible in human society today, quantitatively). Class D is largely modified. The lowest classes E (seriously modified) and F (critically modified) are seen as unacceptable. Environmental Water Requirement sites were identified and regularly monitored all along the main stem (eight in the Sabie Sub Catchment). These structures measure the cumulative natural flow that occurs from the catchment upstream of the Environmental Water Requirement site. Water quality assessments were conducted as well (IUCMA, 2021).

Accordingly, classes of water resources and resource quality objectives for each of the quaternaries of the Inkomati Catchment were formally gazetted in 2016. Overall, the Sabie Sub Catchment was classified as a B Ecological Category. The lower parts of the catchment with the game reserves and Kruger National Park were set as Ecological Category A or AB and upstream parts were Ecological Category C, CD or D. In 2017 the Proposed Reserve Determination of Water Resources for the Inkomati River was gazetted. The observed deterioration of the eco-status from Ecological Category B in 2011 to C in 2016 was attributed to water resource impacts such as sand mining, domestic waste from nearby settlements and untreated sewage effluents from non-functional sewage works (IUCMA, 2021). The final Reserve determination was gazetted in 2019 (Department of Water and Sanitation, 2019).

Notably, it had appeared that the model to assess the mean annual runoff along the whole river flow had fundamental errors. This model was abandoned again in other modelling studies. For example, the Water Reconciliation Strategy for the Mbombela municipal area (Department of Water and Sanitation, 2018) used the national Water Resources Yield Model again, as it had also been used in the earlier Inkomati Water Availability Assessment Studies (IWAAS). Nevertheless, despite the flaws, it continued to be the basis for the gazetted Environmental Water Requirements. This reflects a fair dose of arbitrariness.

In water resource planning debates about the Sabie River and its tributary the Sand River, and water from the Inyaka Dam, the downstream game reserves, including Kruger National Park, tend to claim the prioritization of adequate upstream flows to meet the pristine A and AB status of these areas. However, little or no attention is paid to the implication, which is that all upstream users, including those living in the former homelands, should reduce water uptake from the streams flowing over their lands even for domestic uses beyond 25 litres per capita per day (lpcd). The revitalization of government smallholder irrigation schemes or any farmer-led irrigation should also stop. A continued A and AB status of almost 'pristine' would imply that the parks are liberated from constructing their own storage or drilling boreholes for dry season water resource availability for their wealthy tourists, staff and fauna other than fish and aquatic life. Instead, supposedly, the burden to store water in the wet season for use in the dry season or groundwater abstraction in that period shifts to upstream users. History helps to explain the link between wild parks and environmental flows.

Green apartheid?

Defining wild parks as primary environmental concern arose during apartheid, which, unfortunately, gets worse as 'green apartheid' (Koot et al., 2022). When urbanization and industrialization in the White minority economy came up in the 1960s, the Commission of Enquiry into Water Matters of the apartheid government started emphasizing the higher 'economic viability' of these 'economic' water uses over earlier White irrigated agriculture. In sharp contrast, they defined tourists' wild parks as 'the environment' and a water user in its own right, while keeping full control over those waters, stating:

> It would be disastrous both for nature conservation and for our tourist industry if too little water were to be made available for wild life in the Kruger Park. Other nature conservation areas, such as the St. Lucia Lake, require fresh water for the protection of natural assets. Provision needs to be made for the reasonable needs of nature conservation areas. (Department of Water Affairs, 1970)

This commission estimated that this would not exceed 1% of total water requirements. By 1986, the department had added 300 smaller White reserves as 'the environment', claiming an approximate best guess proportion of 13% of water resources. In those reserves, water was needed for domestic water for visitors, game-watering and the maintenance of the riverine habitat – the latter accounting for approximately 98% of the demand. The estimated water requirements for the Kruger Park alone represented two-thirds of the water demands of 'the environment' (Department of Water Affairs, 1986). Hence, in addition to the land evictions that had pushed communities out of the Kruger Park, which served as a military buffer zone with downstream Mozambique, into

congested upstream strips of homelands, the downstream tourist parks also claimed priority rights over water resources in both the parks *and* upstream flows.

Despite the ending of apartheid, the game reserves adjacent to Kruger National Park continue expanding by associations of private land holders; fences bordering Kruger Park are removed. Representatives organized in the Sabie River Working Group decided that a minimum flow of 0.6 m^3/s should reach the Kruger National Park year-round (Agterkamp, 2009). This figure is regularly mentioned in later studies, also as a cross-border international obligation to Mozambique. Simulations in the Reconciliation Study (Department of Water and Sanitation, 2018) highlight that the current Ecological Water Requirements are already much larger than that figure, so the proposed Ecological Reserve already meets priority 2 of international obligations.

A study in Hoedspruit, just north of the Sand River Sub System, highlighted this outright competition for land *and* water (Thakholi & Büscher, 2021). In the name of spectacular African wilderness experiences for the international and national elite tourists, the Hoedspruit Wildlife Estate (HWE) Environmental Management Plan (prepared by Bateleur Ecological Services) highlights:

> the threats to the estate of low-cost housing on neighbouring properties [Bangu and Mokoena plot] resulting in property devaluation, theft, poaching and increased pressure on the water resource. This will in turn have a negative impact on the management of fauna & flora of the estate, causing the estate to bend/change the rules for the sake of investment, and to the detriment of conservation.

As Thakholi and Büscher (2021, p. 10) comment:

> The glaring irony here is that over 100 people on Welverdiend share one communal tap while every 2–4 bedroom house or lodge on the HWE has a flush toilet and shower while others have manicured lawns and swimming pools.

In sum, classifications A–F in the Ecological Reserve risk being interpreted as implicit prioritization of tourists and wild park owners demanding 'pristine' nature for the profitable tourist industry, even though such economic enterprises have a low priority 5 in the NWRS-2. Claimants for water to stay in the stream as the winner continue to pay less or no attention to the inevitable losers, including Black people continuing to lose both their lands and claims to surface waters flowing through their lands. The high A score that rejects any 'modification' implies that wild parks can refuse to find their own infrastructure solutions for dry periods (weirs, dams, boreholes) needed for aquatic life and other uses. Yet, implicitly they impose such burdens even more on marginalized upstream users.

Therefore, 'modification' is part and parcel of human society, and 'pristine' a narrative captured by the wealthy tourist industry. Instead, ranking should be based on the purposes of taking water out (as in the NWRS-2 prioritization) in a shared vision, without arbitrariness, on the portions of flows that should stay in the resource (and preventing pollution). If that vision creates or increases competition, lowest priority uses are to be curtailed before any higher priority is curtailed. This discussion on the Ecological Reserve clarifies the links with the proposed redefinition of the other component of the Reserve, the Basic Human Needs Reserve. This is discussed next, as the first of the three elements in the draft Water Allocation Plan that concretize the prioritization to empower marginalized users bottom-up.

Basic Human Needs Reserve

Problems with the 1997 Basic Human Needs Reserve

The Basic Human Needs Reserve is defined in section 1 of the National Water Act as the quality and quantity of water:

> to satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act, 1997 (Act No. 108 of 1997), for people who are now or who will, in the reasonably near future, be (i) relying upon; (ii) taking water from; or (iii) being supplied from the relevant water resource.

This link with the Water Services Act, so both infrastructure and resources flowing into the infrastructure appeared complex. Initially, in the 1990s, securing a basic water supply for domestic uses in terms of *infrastructure* was, undoubtedly, the most limiting factor for the majority of Black people. Moreover, filling the backlog of water supplies for domestic uses fell under the mandate of the Department of Water itself, whereas other infrastructure development, for example, for irrigation was, and still is, the mandate of the Department of Agriculture. The new Water Services Section of the Department of Water enthusiastically took up the challenge. The small quantity of 25 lpcd was not only a legitimate start for *infrastructure* development, but also, in 2001, government committed to provide these 25 lpcd as free basic water, which later became the administration-intensive Free Basic Services policies for Indigent Households (Department of Water Affairs and Forestry, 2007).

The Basic Human Needs Reserve is the highest priority for water resources flowing into that newly developed infrastructure for 25 lpcd. However, the department's water resource planning already prioritizes water resources needed for so-called 'primary uses' by public facilities for domestic uses by all, including the urban middle-class, and small-scale industries (Department of Water and Sanitation, 2018). These year-round primary uses have the highest assurance of supply of 98%. In most local municipalities, the per capita water allocation for primary uses is much higher than the international guideline of 120 lpcd (IUCMA, 2021). In the light of this practiced prioritization, it is discriminatory when poor South Africans are entitled to a Reserve of just 25 lpcd, whereas other South Africans are assured of much higher volumes of water resources.

A second problem emerged in the calculations of the Basic Human Needs Reserve. As for the Ecological Reserve, the volumes of water of the Basic Human Needs Reserve are also proportions of the mean annual runoffs. Initially, these volumes were calculated by multiplying the number of inhabitants of the given area by 25 lpcd. However, that led to double counting of all inhabitants who are already served by the primary public water supplies. As a solution to double counting, the Basic Human Needs Reserve was only calculated for the people in unserved areas, where public water supplies fail to reach. Here, people take water from streams or aquifers for self-supply. The method proposed by Singh et al. (2011) is to estimate those numbers in unserved areas by assuming that people within 5 km from streams access those streams for self-supply. However, it remains unclear how the people in unserved areas beyond the 5 km are counted. Moreover, the mean annual runoff for the Ecological Reserve is only assessed for the river mainstems. Yet, tributaries may run dry as two-thirds of South Africa's streams are ephemeral, so dry for at least one or two months. Groundwater use is ignored. Again, in spite of

methodological weaknesses, this method was adopted in the 2019 Gazette of the Reserve in the Inkomati Sub Catchment. In most cases, the volumes calculated for the Basic Human Needs Reserve are less than 1%, sometimes 2% of total flows and in only one case 10% for the quaternary in the former homeland close to the Kruger National Park (Department of Water and Sanitation, 2019).

A third problem with the Basic Human Needs Reserve is that monitoring and enforcement remain unclear. Does the Water Ecosystems section of the department monitor and enforce that water taken *out* of the source is primarily used to meet everyone's Basic Human Needs? Or, as already flagged by King and Pienaar (2011), does the water resource planning section of the Department of Water and Sanitation take up this responsibility?

Lastly, the strict focus on 25 lpcd for basic domestic uses only, which was justified in the 1990s for new infrastructure, ignores the realities that many people in the rural areas of the Sabie Sub Catchment and in informal water economies across former homelands and former White areas in South Africa depend on self-supply not only to meet domestic uses but also many basic productive water needs, including livestock, gardening and small-scale irrigation, crafts, small-scale enterprise, and cultural uses. In this way, at no cost to the taxpayer, they realize constitutional rights to food, historical justice and racial equity.

The proposed redefinition of the all-inclusive Basic Human Needs Reserve addresses all four problems, as follows. Enforcement is the responsibility of the water resources planning section.

Constitutionally based Basic Human Needs Reserve

The draft Water Allocation Plan of the Sabie Sub Catchment interprets the Basic Human Needs Reserve as 'high-priority core minimum water resource rights for basic domestic AND basic productive water'. This aligns with Section 27 of the Constitution, stipulating that 'everyone has the right to have access to sufficient food and water', with the onus on government to progressively realize those rights. This also aligns with the core minimums iterated in the third priority for water for poverty eradication and livelihoods (IUCMA, 2022).

More thought is needed for urban settings, but for rural settings Schedule One fits the purpose of further specification. The Inkomati–Usuthu Catchment Management Strategy already prioritizes Schedule One uses for poverty eradication after the Reserve and International Obligations, and before any other uses (IUCMA, 2021). Schedule One's 'subsistence uses' are defined as: 'reasonable domestic use [. . .] small gardening not for commercial purposes and the watering of animals excluding feedlots [. . .] if the use is not excessive in relation to the capacity of the water resource and the needs of other users' (RSA, 1998). The inclusion of 'reasonable domestic uses' moves beyond the paltry minimum of 25 lpcd adopted for water services. By elevating Schedule One to a constitutionally based Basic Human Needs Reserve, the problem of the weak legal status of just being exempted from the obligation to apply for a licence is solved at the same time.

This section explored a redefinition of Basic Human Needs Reserve that aligns with the Constitution and operationalizes priority 1 (the Reserve) and part of priority 3 (poverty eradication and livelihoods). It also clarified the distinction between infrastructure and water resources flowing into infrastructure. The duty to enforce the latter lies with the water resource planning section, separate from defining and enforcing the Ecological

Reserve. A widely endorsed, well-corroborated agreement about the proportion of flows (or aquifers) that should stay in the source, increases competition. This renders prioritization among all human uses even more important. Instead of ranking environmental values according to a non-existing 'pristine' state without any modification, prioritization ranks equity in modification.

In rural areas across the country, Schedule One uses can be seen and enforced as an all-inclusive Basic Human Needs Reserve. In customarily governed former homelands, moral economies and social safety nets may already ensure such core minimum volumes for all when community members compete among each other for limited water resources. After all, denying those most in need to access to water resources would aggravate ill-being, and remain a problem for the community (Komakech, 2013). However, customary water tenure is more than this bare minimum. Full recognition aligns with the third priority for racial equity, as discussed next.

Priority 3: Prioritizing customary water tenure in the 'sharing out' of water resources

The draft Water Allocation Plan of the Sabie Sub Catchment proposes:

> recognizing and protecting customary water rights, with the state as the licence holder. This is necessary to protect customary water uses in the 'sharing out' of the water resources (which are collectively held within former homelands) with outsiders sharing the same water source. (IUCMA, 2022)

This principle operationalizes priority 3 by addressing the legacy of the deepest historical racial inequities: territorial segregation, pushing Black people into former homelands on just 13% of the country's area, and even partially controlling the water resources appurtenant to these areas in oppressive forms of legal pluralism (Murombo, 2021). White farmers in the Sabie Sub Catchment were found to continue demeaning water uses in the former homelands as uncontrolled, if not illegal. Yet, researchers and non-governmental organisations (NGOs) in the Sabie Sub Catchment (Pollard & Cousins, 2008) and elsewhere in South Africa (Murombo, 2021; Tapela, 2015), or Africa (Komakech, 2013; Van Koppen, 2022) have highlighted the living customary arrangements within and between communities to share the collectively held water resources flowing over and located under their lands. In order to achieve transformation, community-based governance 'should be embraced rather than rejected as "illegal" or "informal"' (Pollard & Cousins, 2008, p. viii).

In fact, the 1956 Water Act of the apartheid government recognized legal pluralism and the customary governance of the collectively held water resources within the homeland boundaries (Thompson et al., 2001). In that sense, pre-1998 ELU were much broader than the official government smallholder irrigation schemes, and included all pre-1998 water uses within former homelands. However, these collective rights were vested in the tribal chiefs appointed as paid employees of the apartheid regime. They were hardly respected by communities. The formal so-called transboundary water-sharing treaties between the apartheid government and these chiefs ensured, above all, that Whites continued their strong claims to the surface water resources up- and downstream of the homeland boundaries. An example is the 1992 'Agreement on the development and utilisation of the water resources of the Komati River Basin between the Government of the Republic of

South Africa and the Government of KaNgwane'. This was based on 'wishing to further promote the tradition of good neighbourliness and peaceful co-operation on a regional basis between the Parties on the basis of the rules approved in 1966 at Helsinki by the 52nd Conference of the International Law Association' (Government of South Africa and Government of KaNgwane, 1992). Moreover, the declaration of Government Water Control Areas in the 1956 Water Act could also extend to areas in homelands for water abstraction by mines or others, as documented in the Limpopo Catchment (Department of Water Affairs, 1991).

The draft Water Allocation Plan of the Sabie Sand Sub Catchment seeks to redress this apartheid legacy of skewed legal pluralism by elevating living customary water tenure from its apartheid-era secondary legal status to a priority status today. Such elevation was also promulgated for land as the Interim Protection of Informal Land Rights Act (IPILRA) (Murombo, 2021).

For concrete implications, it is useful to distinguish between the 'sharing in' of the water resources collectively held by all inhabitants within former homelands with a birth right to its waters and the 'sharing out' of these water resources with up- and downstream users in former White areas, sharing the same surface streams or sharing the same aquifers. For the 'sharing in' of water resources, living customary tenure can either stay as an autonomous parallel system, primarily governed under customary, largely oral arrangements, or it can be amalgamated in statutory law, for example, for better alignment with the Basic Human Needs Reserve, gender equality or other constitutional rights.

However, in the 'sharing out' of water resources, there is no choice: statutory and customary systems inevitably interact: the same streams or aquifers are to be shared (Burchi, 2012, 2019). The priority 3 status of water uses for racial redress can justify that lower priority up- and downstream users and external agencies encroaching into former homelands to abstract the water resources, have a lesser priority. In the Sabie Sub Catchment, those upstream low priority users are commercial forestry plantations. A priority allocation of the shared streams for downstream homelands strengthens the ongoing efforts of the IUCMA to reduce water uptake by these commercial tree plantations (IUCMA, 2021). The lower priority downstream users are White-dominated irrigation boards and the tourist wild parks. The glaring case of sand-digging by brick-making companies in a former homeland is an example of encroachment of high-impact users. The Inkomati–Usuthu Catchment Management Strategy flags the collaboration:

> disregard for compliance by many users including the unauthorised river sand mining creates long-term negative impacts which may see the desertification of the rivers in future. This requires a concerted effort of the IUCMA and sector departments such as the Department of Mineral Resources (DMR) and Department of Environmental Affairs (DEA) as well as the House of Traditional leadership cooperating to ensure there is sustainable and responsible mining of river sand which has a socio-economic benefit without threatening the sustainability of the water resources and subsequent non-compliance to the International Obligations. (IUCMA, 2021)

The appropriate legal tool to prioritize customary arrangements over lower priority but high-impact upstream, downstream or encroaching users is still under consideration (Murombo, 2022). It can be a collective licence as proposed in the draft Water Allocation Plan, or a priority General Authorization, or an explicit provision or amendment in the National Water Act, or even a specific law recognizing customary entitlements.

In all cases, the Department of Water and Sanitation would monitor streams flowing in and out of former homelands, for example, in tandem with the monitoring of specific sites to check Environmental Water Requirements. Above all, in the IUCMA's spirit of decentralization to catchment management forums, awareness of the entitlements in the draft Water Allocation Plan enables communities to defend not only their constitutionally based Basic Human Rights Reserve but also their customary water uses and governance of somewhat higher volumes.

Certainly, the line between insiders and outsiders taking up water governed by customary tenure is thin given the strong socio-economic relations across South Africa. Moreover, in former homelands' densely populated areas with limited water resources, as in the Sabie Sub Catchment, water uptake for even small-scale use, for example, just 5 ha of irrigation, may already infringe on neighbours' basic human water needs. It is still an open question what the roles of the catchment management forums, IUCMA, Department of Water and Sanitation, Department of Agriculture or other departments, civil society and traditional structures should be in such situations. In any case, customary arrangements would be a useful starting point to prevent conflicts, for example, through customary processes to seek permission for new water uptake from other community members or chiefs. Once conflicts have erupted, precious customary conflict resolution procedures can be followed (Tapela, 2015; Van Koppen et al., 2021). In former White areas, community customs have probably largely eroded, but informal water resource sharing arrangements may exist. Decentralized catchment management forums can build on these arrangements.

The fourth section unravelled the proposed new interpretation of racial equity in priority 3, in line with the Constitution: recognizing customary water tenure in former homelands. One concrete implication of elevating the legal status of customary water tenure is its protection against up- and downstream high-impact users.

The Basic Human Needs Reserve (for all citizens) and the prioritization of customary water tenure in former homelands are collective entitlements, for which right holders need, at best, an identity card. However, across the country, all other small- and medium-scale water users formally face the above-mentioned problems of administrative discrimination in current licensing. This is the third issue in the draft Water Allocation Plans, discussed next.

Priority 3: General Authorizations

In the grey area between bottom-up protection and top-down regulation, one of the emerging problems is the cumbersome licensing process imposed on even the smallest uses just above Schedule One. As mentioned, the Department of Water and Sanitation notes that itis logistically unable to process, which marginalizes these priority 3 users even more vis-à-vis priority 5 users. This not only contradicts the NWRS-2 prioritization but also represents unconstitutional administrative discrimination.

The draft Water Allocation Plan of the Sabie Sub Catchment addresses this by proposing:

> For small and medium water users: ending current administrative discrimination in licensing through priority General Authorizations (which can change over time) in former commercial white areas, and consultative processes in former homelands.

All water policies and strategies since 1998, repeatedly invoked by the Department of Agriculture, Land Reform and Rural Development (2022), highlight the importance of General Authorizations as a tool to, at least, avoid disproportionate administrative burdens for small- and medium-scale Black water users.

The legal tool of the General Authorization in the National Water Act (s 39) is a collective regulation that may include individual obligations, designed to alleviate administrative burdens to government. It enables the responsible authority by gazette to:

> (a) generally; (b) in relation to a specific water resource; or (c) within an area specified in the notice, authorise all or any category of persons to use water, subject to any regulation made under section 26 and any conditions imposed under section 29.

The responsible authority may impose collective obligations, such as water quality protection, but also certain obligations on individuals, for example, registration. Registration is the current practice of the IUCMA. It recommended General Authorizations for just over half of its 180 applications for water-use authorization between 2015 and 2019 to the national Department of Water and Sanitation for approval (IUCMA, 2021). Another condition could be some proof that proposed new water uptake does not infringe on higher priority uses.

Kenya's approach to permitting as another way to meet governments' needs for information is proportionate. Four categories are distinguished: from A (small uses that only need to register at the lowest catchment levels) to D (high-impact national or transboundary water schemes to be regulated at national level (Van Koppen & Schreiner, 2018).

Formalization in the grey area between the high-impact priority 5 users and priority 1 and 3 water users depends on the purpose of formalization. If information collection is the goal, advanced water resource assessments and modelling tools are easier and more informative than individual registration. Billing of water resource management charges also requires different considerations. Such fit-for-purpose tools enable the Department of Water and Sanitation to focus its scarce regulatory resources even more on regulating the relatively few high-impact users with the lowest priority 5 by enforcing a due planning process with free, prior and informed consent by all higher priority users who are potentially impacted, now or in the future.

Conclusions

The South African NWRS-2 fills a global gap in actionable principles and legal tools for equitable water resource allocation. Its legally binding prioritization addresses the obvious problem: competition in the dry season or longer with, inevitably, winners and losers. Competition is already widespread throughout South Africa. Prioritization is inclusive: it is valid across informal, customary water economies and the formal water economy in which a minority tends to take a disproportionate share of finite water resources. Transparency about winners and losers is in the interest of those who typically lose when allocation remains hidden or is veiled in narratives. Prioritization aligns with

constitutional and national goals, and can be adjusted to diverse local contexts. Wherever supply augmentation is still feasible, prioritization can also shape such future supply augmentation. Long-term water resource security that anticipates future competition encourages high priority water users to invest themselves in supply augmentation, besides guiding government on targeted support to augment supplies to highest priority users. In sum, lessons learnt in South Africa may well be relevant in similar contexts elsewhere.

This article presented findings of a study of emerging experiences of the implementation of this prioritization by the IUCMA in its draft Water Allocation Plan of the water-scarce, inequitable Sabie Sub Catchment. The study focused on the empowerment of the highest priority users, so priority 1 (Basic Human Needs Reserve, with the state as duty bearer) and 3 (water uses contributing to poverty eradication, livelihoods and racial and gender equity). The study analysed three arrangements to render the prioritization more concrete, both as a redefinition of existing legal tools (the Reserve and General Authorizations) and as a new interpretation of racial equity: legal elevation of customary water tenure in former homelands.

The Basic Human Needs Reserve is a perfect legal tool, with government as the duty-bearer, to enforce everyone's right to the uses of water resources that contribute to meeting constitutional rights to sufficient water and food. A Basic Human Needs Reserve can follow the constitutional definition – and common sense – of rural people's multiple basic domestic *and* productive water needs. In rural areas, Schedule One definitions can be used, as already prioritized by the IUCMA. This also overcomes the problem that Schedule One uses are invisible, which gives a weak legal status.

The Basic Human Needs Reserve is about priorities in *taking water out* of the source, and the Ecological Reserve, which is about water that should *stay in* the source. With more water resources staying in the source, competition for remaining waters for society becomes fiercer. Hence, prioritization among those uses is even more relevant. Otherwise, inequalities may widen as 'green apartheid', as emerged in the Sabie Sub Catchment. Here, claims by the downstream tourist industry of wild parks to year-round pristine flows directly challenge any water uses in the adjacent upstream former homelands that share the same streams.

The second arrangement in the draft Water Allocation Plan studied interprets the third priority for racial equity as a recognition of customary water tenure in former homelands. During apartheid, the collectively held water resources within the homeland boundaries were second-class collective entitlements. By elevating customary water tenure to a priority, customary uses have to be respected by the lower priority users up- and downstream (commercial forestry, White irrigation boards and the wild park tourist industry) and by third parties encroaching in former homelands to tap into these water resources (a brick-making factory mining sand). A collective licence or other legal tools can realize this elevation, as still under consideration.

The third arrangement studied regards small- and medium-scale individual users who are still priority 3 users but currently require some form of individual formalization of use, for example, registration. The Sabie Sub Catchment draft Water Allocation Plan explores General Authorizations to avoid administrative discrimination by disproportionate, if not unrealistic obligations of formalization to water users and, implicitly to itself.

These three, or comparable legal arrangements to empower the large numbers of small-scale rural users, are one side of the coin; the other side is the factual regulation and curtailment the high-impact but lowest priority uses. However, transparent, widely endorsed legitimacy of highest priority uses for life will support the 'losing' lower priority users in accepting such settlement. In the end, we believe, everyone will win in this way.

Acknowledgements

The findings presented in this article are derived from the project 'Operationalizing Hybrid Water Law for Historical Justice in South Africa', funded by the Water Research Commission (WRC) and jointly implemented by the WRC, International Water Management Institute, School of Law, University of Witwatersrand, the Catchment Management Agency of the Inkomati–Usuthu Water Management Area, and the Department of Water and Sanitation. We are grateful for the reviewers' helpful comments.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Water Research Commission South Africa [grant number 3040/1/22].

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