

A Hybrid Approach to Decolonize Formal Water Law in Africa



Barbara van Koppen and Barbara Schreiner



Research Reports

The publications in this series cover a wide range of subjects—from computer modeling to experience with water user associations—and vary in content from directly applicable research to more basic studies, on which applied work ultimately depends. Some research reports are narrowly focused, analytical and detailed empirical studies; others are wide-ranging and synthetic overviews of generic problems.

Although most of the reports are published by IWMI staff and their collaborators, we welcome contributions from others. Each report is reviewed internally by IWMI staff, and by external reviewers. The reports are published and distributed both in hard copy and electronically (www.iwmi.org) and where possible all data and analyses will be available as separate downloadable files. Reports may be copied freely and cited with due acknowledgment.

About IWMI

IWMI's mission is to *provide evidence-based solutions to sustainably manage water and land resources for food security, people's livelihoods and the environment*. IWMI works in partnership with governments, civil society and the private sector to develop scalable agricultural water management solutions that have a tangible impact on poverty reduction, food security and ecosystem health.

IWMI Research Report 173

A Hybrid Approach to Decolonize Formal Water Law in Africa

Barbara van Koppen and Barbara Schreiner

International Water Management Institute (IWMI)
P O Box 2075, Colombo, Sri Lanka

The authors: Barbara van Koppen is Principal Researcher in rural sociology and gender at the International Water Management Institute (IWMI), Pretoria, South Africa; and Barbara Schreiner is Executive Director at Pegasys Institute, Pretoria, South Africa. She is also a member of the IWMI Board of Governors.

van Koppen, B.; Schreiner, B. 2018. *A hybrid approach to decolonize formal water law in Africa*. Colombo, Sri Lanka: International Water Management Institute (IWMI). 45p. (IWMI Research Report 173). doi: 10.5337/2018.219

/ legislation / legal pluralism / customary law / water law / water resources / water users / water use / water rights / water management / water allocation / water policy / water governance / water distribution / water security / colonialism / economic aspects / state intervention / authorities / investment / rural population / political aspects / regulations / small scale systems / equity / marginalization / Africa / South Africa / Kenya / Malawi / Uganda / Zimbabwe /

ISSN 1026-0862

ISBN 978-92-9090-870-8

Copyright © 2018, by IWMI. All rights reserved. IWMI encourages the use of its material provided that the organization is acknowledged and kept informed in all such instances.

Front cover photograph shows customary canal development among the matrilineal Waluguru, Tanzania (*photo:* Barbara van Koppen).

Please send inquiries and comments to IWMI-Publications@cgiar.org

A free copy of this publication can be downloaded at
www.iwmi.org/publications/iwmi-research-reports/

Acknowledgements

This report derives from the *Water law reform to improve water security for vulnerable people in Africa* project conducted by the Pegasys Institute and the International Water Management Institute (IWMI) with the participation of senior government officials and researchers from Malawi, Uganda, Zimbabwe, Kenya and South Africa, and contributions from the Fair Water Futures project and the Environmental Law Institute. The authors gratefully acknowledge their inputs and fruitful debates. The South African component of the project also benefitted from the dialogues with the country's Department of Agriculture, Forestry and Fisheries (DAFF). The useful comments provided by the internal and external reviewers, and Diana Suhardiman (Research Group Leader – Governance and Gender, IWMI) on earlier drafts of the report are greatly appreciated.

Project



This study is an output of the *Water law reform to improve water security for vulnerable people in Africa* project funded through an Accelerated Grant under the Oxford University REACH Program, supported by UK Aid from the UK Department for International Development (DFID) for the benefit of developing countries (Aries Code 201880).

Collaborators



International Water Management Institute (IWMI)



Pegasys Institute, Pretoria, South Africa

Donors

This research study was funded by the following:



REACH Program, Oxford University, UK



UK Department for International Development (DFID)
The views expressed and information contained in this Research Report are not necessarily those of or endorsed by DFID, which can accept no responsibility for such views or information or for any reliance placed on them.

This work was also undertaken as part of the CGIAR Research Program on Policies, Institutions, and Markets (PIM) under its *Governance of Natural Resources* research flagship.



The CGIAR Research Program on Policies, Institutions, and Markets (PIM) is led by the International Food Policy Research Institute (IFPRI) and supported by CGIAR Trust Fund Donors (<https://www.cgiar.org/funders/>).

Contents

Summary	vii
Introduction	1
Problem Statement	1
Aim and Method	2
Contribution to Global Debates	3
Living Customary Water Law	5
Structure	5
Current Implementation of Permitting	6
Entitlements in the Colonial Era: Water Grab and State Building	8
Water Grab by the Colonial State	8
Dispossession of African Water Entitlements	10
One Single Law for Colonial State Building	11
Command and Control State Authority Structures	12
Regulation to Serve the Colonial Hydraulic Mission	13
Technical Information	13
Allocation through Prioritization	13
Revenue Collection	14
Post-independence Entitlements: Consolidating Marginalization	15
State Goals in Dual Economies	15
State Custodianship and Imposing Nationwide Conversion	16
Continuing Entitlements in the Formal Economies	17
Dispossession of Prior Water Investments in Informal Economies	18
Post-independence Regulation: An Administrative Nightmare	21
More Water Users and More Water Resources	21
More Regulation and Information Requirements of More Activities and Uses	21
Shorter Duration and Cancellation	22
Lower Thresholds of Exemptions	22
Revenue Collection	23
Under-resourced Water Authorities	23
Options to Decolonize Statutory Water Law	25
Water Use Prioritization to Achieve National Goals	25
Permits to Regulate High-impact Users	26
Recognizing Customary Law	27
Conclusions	28
References	30
Annex 1. Water Legislation Examined for this Report	34
Annex 2. Trends in Exempted Uses over Time	35

Summary

Since the 1990s, many sub-Saharan African countries have promulgated statutory water laws that include nationwide permit systems promoted as global best practices. However, significant challenges have emerged. Permit systems widen inequalities and their implementation is logistically impossible. This report traces the causes of these challenges back to the colonial roots of permit systems with the aim of identifying the colonial 'wrongs' that need to be removed and the 'rights' to be taken forward in a way that there is alignment with the water authorities' current practices. The proposed hybrid approach recognizes living customary law and targets regulatory permits at the relatively few formal, high-impact water users.

The report starts by analyzing how inequalities are widening because permits, or exemptions below a certain threshold, are the sole way to legalize water use, as prescribed by the water legislation. This overrides the widespread living customary water rights regimes, which, since time immemorial, have governed investments in water infrastructure for self-supply and water sharing by, currently, millions of small-scale and micro-scale water users in Africa's informal rural economies. On top of ignoring these water rights, the micro-scale water users who are exempted from the obligation to apply for a permit are categorically marginalized because exempted uses have a weaker legal standing than permitted water uses. Small-scale users who are obliged to apply for permits - at disproportionately high costs relative to large users - are *de jure* criminalized without a permit. Yet, the high administrative burdens of permit systems prohibit states from informing the large numbers of small-scale users and processing their applications. This is an administrative injustice. At the same time, the relatively few permits with their superior entitlements that have been issued remain heavily biased towards formal large users with the highest impacts on other water users and aquatic ecosystems.

Focusing on Malawi, Kenya, South Africa, Uganda and Zimbabwe, the report identifies

the causes of these challenges in the colonial introduction of permit systems in the early 1900s. These laws claimed colonial ownership of water resources, mainly surface water at the time, and issued permits to settlers only. This vested superior water entitlements in the settlers. The conditions tied to permits provided the newly established colonial water authority with useful hydrological and technical information about new terrains, and included fees for cost recovery. The legislation recognized African customary water rights regimes but declared an inferior entitlement. Thus, permit systems served the colonial government's state building and settlers' hydraulic mission in support of the minority colonial economy.

After independence, colonial ownership shifted to custodianship by the new state. However, instead of recognizing living customary water law, permits and exemptions remained the single legal tool to define water uses as lawful. The informal small-scale users, who had been purposively excluded before, were suddenly subsumed under the permit system. Moreover, administrative burdens to reach the fast-growing rural populations rocketed even more in the subsequent legal revisions, which extended permits to include groundwater and a greater range of water-related activities; increased conditions; shortened durations requiring more frequent renewals; lowered thresholds for exemptions; and intensified revenue collection, while initial donor funding for reforms and implementation dwindled.

The report concludes by suggesting options to decolonize statutory water law through a hybrid approach. The 'wrong' of the past to be removed is that permits or exemptions are the exclusive tool for any water users to become lawful amidst legal pluralism. Instead, permit holders and small- and micro-scale non-permit holders should be given equal legal standing. Water allocation and conflict resolution during water scarcity and droughts, which are still rudimentary in current legislation, should be guided by a prioritization that reflects national goals, including local economic development and constitutional rights to

water for domestic and productive uses for basic well-being. Such a normative framework underpins two tools to implement the hybrid approach.

First, permits should continue as a targeted and lean regulatory tool – not as an entitlement - to set and enforce water use conditions and fees on the relatively few formal users who use a finite national asset with highest impacts on other users and aquatic ecosystems. This implies transparent permit application procedures that protect potentially affected small- and micro-scale users and enable them to negotiate sharing of benefits or compensation. Second, in order to effectively prevent and resolve conflicts among

the many medium-, small- and micro-scale users, states should recognize and build on the myriad living customary arrangements that align with national priorities and constitutional requirements. This hybrid approach with its tools is in line with current practices of permitting, is administratively lean, recognizes customary law and protects the most vulnerable. Instead of being entangled in concerns of getting a permit or not, the overdue concerns become: what are the ultimate goals that communities and states want to achieve through the regulation of precious water resources, and how best can that be realized? How can living customary arrangements contribute to that?

A Hybrid Approach to Decolonize Formal Water Law in Africa

Barbara van Koppen and Barbara Schreiner

Introduction

Problem Statement

Since the 1990s, many sub-Saharan African (SSA) countries have promulgated water laws based on the purported global best practice of Integrated Water Resources Management (IWRM) (cf. Mehta et al. 2017). These laws define the state as the custodian of most, if not all, of the nation's water resources, and prescribe permits to abstract and use naturally available or 'raw' water legally. An exemption from the obligation to apply for a permit is granted for specified uses below certain thresholds, such as basic domestic uses and micro-scale productive uses, also called *de minimis* uses (Hodgson 2004).

While implementation is gaining momentum, it is increasingly acknowledged that permit systems widen inequalities and bring extremely heavy administrative burdens to states. Current permit holders are still only a fraction of all water users obliged to apply for a permit and they are strongly biased towards the relatively few large users, such as large-scale irrigated farms, industries, mines, hydropower providers or municipalities. These users have the highest impacts on other water users and aquatic ecosystems. In contrast, the millions of small-scale water users who directly abstract raw water are further marginalized in three forms. First, permit systems override the customary or informal¹ water rights regimes that have governed their investments in water infrastructure for self-supply and water sharing since time immemorial (Ramazotti 1996; Meinzen-Dick and Nkonya 2007; Bolding et al. 1996; Makurira and Viriri 2017).

These informal investments in infrastructure continue to expand (Woodhouse et al. 2017). For example, in Limpopo Province of South Africa, the area covered by informal, self-financed irrigation for self-supply is at least three times the area covered by public smallholder irrigation schemes (van Koppen et al. 2017a). For Ghana, Giordano et al. (2012) documented how private manual and motorized irrigation by smallholders employs 45 times more individuals and covers 25 times more land than public irrigation schemes. These informal arrangements significantly contribute to broad-based agricultural growth and poverty alleviation, at no cost to the tax payer.

Second, permit systems marginalize informal small-scale users by infringing on their constitutional rights of fair treatment (van Koppen et al. 2014). Small-scale water users who are obliged to apply for a permit, but have no permit, commit an offence which carries the potential penalty of being fined or jailed or both. Yet, water authorities lack the administrative capacities to reach millions of dispersed small-scale users without access to the internet, bank accounts or affordable transport. This is even the case in South Africa, which has a relatively well-staffed water authority. Moreover, the country's National Water Act of 1998 only requires permits (called licenses) for new water abstractions after 1998. Water uses that were lawful under earlier legal regimes remain "Existing Lawful Uses" (ELUs) (RSA 1998). Nevertheless, even in South Africa, the second edition of the National Water Resource Strategy (DWA 2013a) admits, "Current licensing processes are often costly, very lengthy,

¹ The terms living customary, customary, informal, local, indigenous and community-based law are used interchangeably. They refer to the usually oral long-standing rules and practices that are seen as legitimate and binding (Meinzen-Dick and Nkonya 2007).

bureaucratic and inaccessible to many South Africans.” So, these small-scale users are obliged to apply for a permit and criminalized without a permit but practically unable to obtain a permit.

Third, permit systems marginalize micro-scale water users who are exempted from the obligation to apply for a permit. They are categorically marginalized because the legal standing of exempted water users is weaker than that of permitted water users (Hodgson 2004; Burchi 2012). These intrinsic features of permit systems in low-income countries with large agrarian populations are incompatible with the principles of equality and fair treatment (van Koppen and Schreiner 2014a).

Aim and Method

This report aims to find explanations of these injustices and logistic burdens and, based on that evidence, identify policy recommendations. For this, we go back to the colonial origins of permit systems and seek to decolonize the ‘wrongs’ of the past while perpetuating the ‘rights’. The post-1990 generation of water laws in SSA were not new or ‘modern’ at all. They were a revival and expansion (or for some countries, a new adoption²) of the permit systems introduced by the colonial powers from the 1920s onwards.

This study focuses on five countries: Zimbabwe (where the 1927 Water Act of the then Southern Rhodesia combined permits and riparian rights); Kenya (where the 1929 Water Ordinance put in place Africa’s first fully-fledged permit system); Malawi (with partial permits for groundwater in 1952 in the then Nyasaland); Uganda (which introduced a permit system in 1995); and South Africa (as the most recent country of the five to adopt a nationwide permit system in 1998). The total population of the five countries is just over 165 million³. Half to

two-thirds of this population live in rural areas, making a total between 80 and 100 million people affected by the flaws of permit systems.

We held policy dialogues and conducted an extensive review of national and international literature, and water policies and legislation that have been in place over time in the five countries (see Annex 1 for the laws examined). This included the outputs of the REACH-funded *Water law reform to improve the water security of vulnerable people in Africa* project conducted in 2017: five country reports, a synthesis report and an international policy dialogue (<http://pegasysinstitute.org/publications-media/publications/>).

The analysis focuses on permits for water abstraction and storage. Out of its scope are: water services provision, access to and regulation of potable water, health issues, dam safety, other water quality and pollution prevention issues, easements or servitudes, protection of riparian zones, soil conservation, management of return flows, sanitation, and transboundary water management.

We use the term ‘permit’ in a generic sense. Other terms used in these five countries are licenses or water rights, but they all refer to the same tool. When permits (and exemptions) are the exclusive way for a water authority to declare water abstractions as lawful, the entitlements and obligations of permits are two sides of the same coin. The ‘carrot’ of receiving a state-backed entitlement is then used as the ‘stick’ for the state to impose regulation through specific use conditions. In the words of a Tanzanian water officer, “the entitlements are the ‘cakes’ and the conditions are the ‘spears’ of permit systems” (van Koppen et al. 2014). The name ‘water right’ emphasizes the entitlement and was commonly used in the past (with the exception of Kenya’s 1929 Water Ordinance, which refers to ‘licenses’). The most recent round of revisions in the five

² In Ghana, before the shift to permits in 1996, water rights were tied to land and traditional authorities. Here, the sudden separation of water rights was exposed as unconstitutional (Sarpong 2004). As far as we are aware, Ghana is the only country where permit systems’ infringement on customary water rights was somewhat contested.

³ Kenya - 45,533,000; Malawi - 16,832,900; South Africa - 54,956,900; Uganda - 34,856,813; Zimbabwe - 13,061,239 (https://en.wikipedia.org/wiki/List_of_African_countries_by_population).

countries emphasized the regulatory aspects and changed the term used to 'permit' (with the exception of South Africa, where the term 'license' is used for both water abstraction and waste discharge; and the 2013 Water Resources Act of Malawi, with a 'license' for water use, but a 'permit' for waste discharge. A 'license' in Kenya's 2016 Water Act refers to water service provision and the authorization required by a water service provider).

Contribution to Global Debates

The present study overcomes what has been dubbed a 'limbo' in current global scholarship and policy debate about legal pluralism in water tenure (Burchi 2012). This is the tendency to consider customary and statutory laws as two parallel systems without regarding the interface. This tendency is manifest in the weak references to customary water law in a few water acts of countries such as Namibia, Tanzania and Malawi, and linked to territorial segregation in Kenya and Zimbabwe. Customary law is mentioned as a separate legal sphere. As Burchi (2012, 622) commented:

"These statutes bear evidence of the awareness by lawmakers of the existence and significance of customary or traditional water rights in the field. These are dealt with, however, by basically separating them out of the mainstream 'modern' water rights regulated by statute, and by creating a separate legal space for them. For want of particulars, however, such legal space comes closer to being a legal limbo, which does not prevent the two sets of water rights from mutually interfering at some point, and from clashing eventually."

Obviously, it is important to first recognize customary water rights as having their own legal space and equal standing as statutory law. In this sense, pluralism in water tenure resembles legal pluralism in land or forest tenure. The claim that water is part of such separate land tenure underpins recent efforts to recognize customary

water rights as physically and legally linked to customary land (Alden Wily et al. 2017). However, unlike the fixed space for land and forests, water is fugitive. The interface between customary and statutory law also needs to be addressed. This study unpacks the history of this interface, which leads to the proposed hybrid approach that not only recognizes customary law but reconfigures the tool of permits as well.

This focus on the interface adds a new dimension to the work of scholars, indigenous people and a few states elsewhere. Their work focuses on recognizing customary water rights as a separate legal system with its own space, in particular, in colonized Latin American countries (Boelens 2008; Vera Delgado and Zwarteveen 2017) and industrialized countries such as Canada (Burchi 2012; Jackson 2018), New Zealand (Jackson 2018) or the United States of America (USA) (Getches 2005). Self-identification as 'indigenous people' and 'indigenous rights' legitimizes a separate legal space that is different, but should be of equal legal standing as statutory rights. Proponents invoke the profound differences between both systems, for example, in the source of authority, the role of the collective or the perception whether or not water can be owned at all. Attempts to impose permit systems on communities governed by customary law confirm the need for such separation and autonomous space: individual permits erode the very collective dynamics that make customary regimes work. Indeed, 'It creates chaos' (Boelens 2008). Formal codification into a unitary system has been contested for similar reasons: it 'freezes' these dynamics. In Bolivia, where indigenous people are a majority, the current law provides such separate legal space.

The interface between customary and statutory rights has only partially been addressed as yet. In the USA, Canada and New Zealand, this is done by defining the space of customary rights in relation to overall available water resources, either to the dismay or relative satisfaction of the claimants. In the USA, for example, the allocated water resources were seen as sufficient. Lack of infrastructure remained the main bottleneck to take up the

rights. The statutory vested users benefit from this arrangement by obtaining more security for further investments (Getches 2005).

Another way in which global and African actors engage in this interface is through procedural rights that should ensure that all parties are equally represented in negotiation and decision-making processes about water (e.g., on mining pollution) (UN 2002; Malzbender et al. 2005). The hybrid approach addresses both procedural and substantive dimensions of the interface.

The central place of this interface in the proposed hybrid approach is relevant in any agrarian setting with many scattered small-scale water users and relatively few high-impact users, but even more in SSA for the following reasons.

First, African water users governed by customary rights represent a greater proportion of the rural population than elsewhere. Two-thirds of the population live in rural areas and are governed by non-formal land tenure regimes, so the term 'indigenous' could, in theory, apply to all water users in these areas. However, in SSA, self-identification as 'indigenous' is limited to a few small ethnic groups. This may be related to a fear of reviving ethnicity-based categories and sentiments fuelled by colonizers (Mamdani 1996). So, this report refers to a majority of citizens.

Second, the continent's water scarcity problems and vulnerabilities to climate change are different and more skewed than elsewhere. Less than 4% of water resources have been developed in SSA and there is a lack of storage (Bahri et al. 2011). This causes conflicts in the dry seasons, dry spells and droughts. The top solution is to invest in infrastructure to sustainably store and convey water and make it available for broad-based use and protect against flooding. The investments of citizens in self-supply to that end should be formally welcomed and supported instead of criminalized. Conflicts among customary investors, including those who risk being left behind, should be mediated as feasible. Moreover, customary investments should be protected against foreign and national large-scale deals for land and the related water resources in the 'land and water grabs', which currently get the superior formal entitlements of permits (Franco et al. 2013;

Borras et al. 2011). International trade agreements can entail even stronger claims to water resources than the national laws would allow (Hodgson 2016). Ironically, in the name of their water security, prior and future water security of millions of other investors is compromised. The choice for equitable economic and water resources development should be made in the planning phases. Once investments have been made, the redistribution of raw water resources becomes more difficult or impossible. This is the lesson of South Africa, where colonial powers captured most water resources and the current political goal of redress and redistribution of water from the 'haves' to the 'have-nots' remains ineffective.

Third, unlike well-entrenched legislation elsewhere, the moment for adjustments of statutory law and regulations is opportune. Implementation of the post-1990 round of revisions is still in an early phase. The laws are flexible. Precious implementation experiences have been gained for robust evidence-based adjustments. The logistic impossibility to implement permit systems makes change a necessity, because a law that cannot be implemented is a weak law. As elaborated in the section *Current Implementation of Permitting*, in practice, water authorities already find solutions by targeting permits to the few high-impact users as a regulatory tool for caps on volumes, curtailment rules in case of water shortages, or pollution prohibition. However, monitoring and enforcement or change of conditions to adjust to changing contexts at each permit renewal is rare. Water authorities also realize that permit systems cannot perform three goals all at the same time: to regulate water use allocation, provide net revenue and provide information. For information collection, different and more cost-effective approaches are used. The cumbersome link between legal permitting and revenue collection even just from high-impact users is debated.

Last but not least, the decolonization of legislation in line with rights-based approaches is higher on the national agendas in SSA than elsewhere. For example, after South Africa's drafting of a new constitution, Kenya and Tanzania also initiated massive debates about

new developmental constitutions in which human rights frameworks are used as references. The continuous state formation needs legitimacy by citizens and vice versa (Lund and Eilenberg 2017). Similarly, states depend at least partly on the overwhelming numbers of investors in self-supply who vote. With timely adjustments, statutory water law can gain considerable credibility and legitimacy.

In sum, the search for all-encompassing, new, feasible, lean and fit-for-purpose regulatory tools to manage water in a public interest is already underway in SSA. In practice, permit systems are already being adjusted to ensure that water use effectively contributes to national goals of broad-based economic growth, poverty alleviation and realizing constitutional rights. However, it is still a question how living customary water law can be recognized; how the *de jure* marginalization and criminalization of the majority of water users can be overcome; and how the interface between customary and statutory law, which evolved in the past, can be decolonized in the future. This report aims to contribute to this search for answers and solutions.

Living Customary Water Law

A limitation of the report is its simple reference to 'living customary' or informal, or local law. It is beyond the scope of this report to elaborate this immense range of variable and context-specific oral rules and practices in more detail. In short, as found in the literature (*cf.* Ramazotti 1996) and as adapted from a comparable categorization in Latin America (Boelens 2008), living customary water law is a negotiated blend of three core grounds that communities invoke in their claims to water. Outcomes are locally specific negotiated combinations of these grounds. First, the most common feature in the literature is the notion that water is given by god and cannot be owned. Water is a resource for sharing. Water for drinking purposes and livestock is a priority. Second, the physical connection between water resources and land creates socio-territorial claims to water resources. The third ground is the process of so-

called 'hydraulic property rights creation', in which the construction and subsequent participation in the maintenance of investments in individual or communal infrastructure creates strong rights to manage and use the water conveyed (Coward 1986). Three other grounds shape these core principles: the first-come-first-served principle; transfers by marriage and inheritance or through barter and increasingly through sale; and force or violence.

These grounds and the resolution of inevitable conflicts are embedded in communities' support structures and hierarchies. Customary arrangements tend to avoid conflicts and foster consensus (Cleaver 1998), also avoiding a 'winner takes all' approach. Conflicts that cannot be resolved at the lowest levels move up to higher levels. Derman et al. (2007) highlighted similarities between these norms and general human rights norms. In Zimbabwe, households with self-financed homestead wells or boreholes were morally obliged to allow many neighbors to also take water. This aligns with a human right to water for domestic use. The norm that 'one cannot deny someone to feed his or her family' reflects a human right to water for productive uses (Derman et al. 2007). On the other hand, social and political power relations, gender inequalities, and first-come-first-served principles mean that customary law practices do not always align with constitutional rights (Hellum et al. 2015). Not surprisingly, the report will conclude that more research on customary law is needed.

Structure

The report is structured as follows. The next section *Current Implementation of Permitting* presents the status of permitting in 2017. The figures corroborate that implementation of the permit systems is still limited and biased towards high-impact users in the formal economies. The section *Entitlements in the Colonial Era: Water Grab and State Building* discusses the colonial origins and the different historical trajectories of water legislation in the five countries studied, and their gradual convergence towards fully-fledged

permit systems, from Kenya's first permit system in 1929 to South Africa's adoption of permits in 1998. In this colonial era, the emphasis was on the claimed entitlements. The section *Regulation to Serve the Colonial Hydraulic Mission* is about the regulatory aspects of the earliest colonial permit systems, especially in Southern Rhodesia (later Zimbabwe) and Kenya. It unravels how the regulation served the colonial hydraulic mission.

This is followed by analysis of the policy framings that led to the current fully-fledged permit systems in all five countries studied. First, focusing on the *entitlements* dimension with the consolidation of the marginalization of most citizens using water (section *Post-independence*

Entitlements: Consolidating Marginalization). Second, discussing the *regulatory* arrangements of water allocation, provision of information and revenue collection, in particular the highly resource-intensive administration as a result of the massive expansion of people and resources covered in the permitting with ever-more restrictive conditions (section *Post-independence Regulation: An Administrative Nightmare*). The section *Options to Decolonize Statutory Water Law* proposes options to reconfigure statutory legislation into a hybrid approach that fits the purpose of both effective state regulation and binding legal protection of small-scale informal users' entitlements.

Current Implementation of Permitting

Table 1 shows that, despite growing efforts to implement permitting, the number of permit holders in 2017 comprises only a tiny fraction of the total number of water users (except for South Africa). These numbers are holders of approved permits. The table does not show the administrative burden of monitoring of compliance and the enforcement of permit conditions or the reissuing of expired permits.

Table 1 and other evidence suggest that permits (or the combination of ELU and licenses in South Africa) are biased towards formal large-scale users. In South Africa and Zimbabwe, this dates from the colonial era. In South Africa, water uses that had been lawful under earlier colonial water regimes continued to be lawful according to the National Water Act (1998). In 1999, immediately after the promulgation of the Act, all existing water use had to be registered, which not only provided information on water use, but also served as the basis for revenue generation through water use charges. Around 60,000 existing water users complied, registering a total of around 80,000 different water uses. In South Africa, with its history of racially based capitalism, the overwhelming majority of registered

water users are white, as shown by a study that used this database of registrations. It found that rural water abstractors, such as mines and large-scale farmers, constitute 1.2% of all users but use 95% of the water (Cullis and van Koppen 2008). In spite of the formal goal of the National Water Act (1998) to redress the racial inequities of water allocation in the past, a similar bias was found in the permits issued for water uptake after 1998. Out of the 4,284 new water use permits issued between 1998 and 2012, only 1,518 were for historically disadvantaged individuals (HDIs), with only 1.6% of the water allocated through the 4,284 permits being assigned for these small-scale users (DWA 2013b).

Similarly, in Zimbabwe, most permits date from the pre-independence period between the 1960s and 1980s, when water management was controlled by the white-dominated, Unilateral Declared Independent Rhodesia (Makurira and Viriri 2017).

In Kenya, implementation is more recent. By 2006, 43 years after independence in 1963, there were only 100 valid permits, which seems surprising for a country with the earliest complete permit system since 1929. At independence,

TABLE 1. Number of permits issued and revenue collected.

	Number of permits	Annual water resources management charges collected
Kenya (valid abstraction permits)	2006: 100 2010: 250 2011: 300 2013: 1,700 2016 (September): 4,194 In addition: by 2016: 10,000 authorizations Largest volume: hydropower. Out of all the permits issued for other uses, a total volume of 46% is for irrigation 2013: permits cover 70% of abstracted surface water and 33% of abstracted groundwater Further, the installation of measuring devices is monitored	2013: USD 2.9 million 2014: USD 3.1 million
Malawi (abstraction, waste discharge)	2016: 1,033 licenses issued to 434 water users (active licenses) 1,881 licenses issued to 611 water users (sleeping licenses) 128 licenses of 52 users cancelled Total: 3,042 licenses by 1,097 water users	Maximum achieved: USD 163,550 Potential total: USD 286,220 (82% from Eskom [national electricity company] and large-scale sugar plantations (Illovo).
South Africa (abstraction <i>registrations</i> of uses before the 1998 National Water Act, and post-1998 licenses)	Around 2005: about 80 000 ELU/licenses for water abstraction to 60,000 unique users, of which about 8,000 were taking water from state infrastructure; this excludes waste discharge permits Period 1998-2016: 5,956 new licenses	Income for 2010: USD 23 million
Uganda (all permits – abstraction, waste discharge, drilling – new and renewed)	2010 (October): Total all permits: 491 366 abstractions (232 renewals; 134 new permits) 89 waste discharge permits (39 renewals; 50 new permits) 36 drilling permits 2016: total 1,320 43 drilling permits 856 permits are monitored; 72% complying (50% waste discharge; 74% volume abstracted; 90% drilling)	Fiscal year 2010/2011: USD 45,000 Steadily increasing to: Fiscal year 2014/2015: USD 166,000
Zimbabwe (abstraction), including inactive (so no fee payment) permits	2000: 9,711 (largely from the colonial period 1960s-1980s) 2016: 10,799	Low collection rates since the fast-track land reform

Source: REACH project (<http://pegasysinstitute.org/publications-media/publications/>)

there were 30,000 European settlers, with many white farmers occupying the most fertile areas (Nilsson 2011). If, say, 10% of these were irrigators, there should have been at least 3,000 water permits in 2006. It is possible that the earlier laws had barely been implemented and the databases were lost, or that most of the permits had been terminated or expired. So, most permits in Kenya are recent. The country's Water Resources Management Authority distinguishes

four categories of authorization depending on the risk and the impact on the water resource, and the related tier of the water authority for allocation: A, B, C and D. Category A comprises the smallest users, whose total volumes are negligible. By June 2015, 4,046 surface water and groundwater permits for the categories B, C and D had been issued. The total of 251 permits issued under category D (comprising the largest users), which is 6% of the total of 4,046 permits,

comprise 98% of the total volume permitted for the categories B, C and D together (Shurie et al. 2017). Interestingly, experiences also led to a proposal to shift the resource-intensive task of revenue collection and enforcement from the water authority to the national revenue service (Kenyan Water Resources Authority official, pers. comm., May 2018).

By 2017, Malawi had not yet started implementing the 2013 Water Resources Act, and still used the 1969 Water Resources Act. The capacity of the state to implement permits is extremely weak. Only temporary, one-year licenses are being issued (Mulwafu and Mwamsamali 2017). The revenue collected from water use charges is mainly from one hydropower company and a sugar plantation.

In Uganda, the water authority purposively concentrates its regulatory efforts of permitting on the few large-scale users. Revenue collection is done by the national revenue service (Kiggundu 2017).

From a regulatory perspective, it makes sense to target the large-scale users first as

they disproportionately impact on other users and aquatic ecosystems. They can generally be reached by email and they have bank accounts. Large-scale users also contribute the highest fees. In contrast, the large number of highly dispersed, small-scale users generally lack access to information (in vernacular), internet connections and bank accounts, while transport costs are high.

The problem is about the entitlements: as long as permits (or ELUs) are the way to declare water uses as lawful, national or foreign large-scale users have a stronger legal standing, for a relatively small fee compared to the benefits derived from the use of the water, than the millions of small-scale users without a permit (van Eeden et al. 2016). The exemption from permit requirements has a weaker legal standing and entails the risk that these water uses are ignored and taken away by competitors.

In sum, this state of permitting underscores the relevance of the following analysis, which starts with the question on how these biases came about.

Entitlements in the Colonial Era: Water Grab and State Building

Water Grab by the Colonial State

In the colonial era in all five countries studied, the goal of water legislation was to establish colonial ownership of water and land resources, and to encourage the relatively small number of settlers to develop water infrastructure and use water in support of the nascent colonial economy. Colonial water legislation legitimized this sweeping water grab.

The water laws were rooted in European civil law (with permits) and the British common law (with the riparian regime, in which landowners along streams are entitled to the reasonable use of water from a stream or river together with other riparian landowners). Both derived from

the water law that emerged around 500 before Christ (BC) in the small agrarian society around Rome. In this legal regime, water resources were declared as either 'public' or 'private'. Public waters were shared and required collective management. However, by the end of the Roman Empire, some 1,000 years later, the line between 'collective' management and a dictatorial Roman Emperor who claimed *ownership* of all public water resources was thin. In perhaps one of the earliest outright land and water grabs, the Roman Emperor declared the water resources of conquered tribes as 'public' and hence under his ownership (Caponera 2007; van Koppen 2017).

In the eighteenth century, civil law in continental Europe continued this separation of

public and private waters. Ownership of public water was vested in the state, but very few water uses, one being navigation, were declared as public. The developing bourgeoisie preferred most water to remain under private control. In England, however, the riparian doctrine prevailed. In this regime, ownership of water resources was inconceivable; not even the queen could own water (Caponera 2007; van Koppen 2017).

Nevertheless, one of the first actions of the British colonial powers in the five countries (together with the Dutch in South Africa) was to claim ownership of all water resources to be developed in the short term and, with the precautionary foresight of prospectors, water resources that might become useful in the long term (or ownership of the land and indirectly claiming its associated water resources, as in Uganda). In Southern Rhodesia (now Zimbabwe), Kenya and South Africa, this water grab aligned with territorial segregation in which settlers claimed the fertile, well-watered and upstream lands. A small group of people, mainly British, some Dutch and other water managers, with a mix of sophisticated engineering, hydrological and legal expertise, took the lead. With a growing stake in Southern Africa since the seventeenth century, there had been systematic exchange among the colonial water teams in South Africa, Southern Rhodesia and, probably to some extent, in Nyasaland (now Malawi). Some of them also travelled to Kenya to discuss the country's 1929 Water Ordinance (Nilsson 2011). There was also exchange with India, which included Pakistan and Bangladesh at the time and where British engineers led the design and construction of millions of hectares of large-scale irrigation schemes.

In each of the five countries studied, the trajectories of this legislated water grab and the mix of public and private waters and elements of riparian rights gradually converged into unitary permit systems, as follows.

In **Southern Rhodesia**, the 1927 Water Act stated: "All water, other than private water, is vested in the Governor" (Rhodesia Government Notice No. 22). The 1927 Water Act repealed earlier laws (the 1898 Order in Council, 1912

Union Irrigation Act and 1913 Water Ordinance) and introduced riparian rights for irrigated farming and permits in perpetuity for other uses. The current Water Act of 1998 has abolished all riparian rights and also sets time limits for permits.

Kenya's 1929 Water Ordinance issued by the Colony and Protectorate of Kenya was the first fully-fledged permit system of these five countries and, to the authors' knowledge, of SSA. Section 4 of the Ordinance declared: "the water of every body of water is hereby declared to be the property of the Crown, and its control is hereby declared to be vested in the Governor in Council on behalf of the Crown, subject to the provisions in this Ordinance." 'Body of water' referred to both surface water and water under watercourses. Any diversion, abstraction, obstruction, storage or use of these waters required a permit; only swamps or springs that fell entirely within the boundaries of land that was owned (implicitly: by a settler) was exempted from that obligation.

In **Nyasaland**, the Natural Resources (Amendment) Ordinance 22 of 1952 introduced permits for groundwater use but only in certain areas. The post-independence Malawian Water Ordinance of 1969 introduced water permits at larger scales for most surface water sources as well. The 2013 Water Act consolidates permit systems nationwide for both groundwater and surface water.

In colonial **Uganda**, there was little activity on the part of the colonial powers around specific legislation to regulate the use of water resources. Most farming was done by African smallholders, which is different to Kenya, Zimbabwe and South Africa where the white settlers established large farming areas. Also, with relatively high rainfall, there was less demand for water management and irrigation than in the countries with more limited water resources. In the River Act of 1907 and other legislation, the British focus in Uganda was primarily on it being the assumed main source of the Nile River (Nilsson 2011). Water resources were tied to land, and water management was regulated through the land laws. In 1969, section 27.10 of the Public Land Act claimed state ownership of water by stating: "All rights to the water of any spring river, stream,

watercourse, pond or lake on or under public land whether alienated or not shall be reserved to the government.” The Water Statute of 1995 introduced state custodianship of water resources and a fully-fledged permit system.

In **South Africa**, the colonial rulers claimed authority over an expanding range of water resources from 1652 onwards. After the creation of the Union of South Africa in 1910, the 1912 *Irrigation and Conservation of Waters Act* entrenched the centralized power of the state in regulating and managing water use, along with the use of the riparian regime in white areas, without defining rights in the native reserves, which later became the homelands. South Africa was the last country of the five studied to adopt a permit system for abstraction in 1998, 4 years after the establishment of a democratic dispensation in 1994. In addition to the intention to regulate increasing competition for water, the permit system was also intended to be a vehicle for the redress of historical racial inequality in access to water. However, as mentioned, water abstraction that was lawful before 1998 remained lawful as ELUs under the 1998 National Water Act. Those who drafted the Act envisaged that such ELUs were to be converted into licenses either at the behest of the user or due to compulsory licensing. Under compulsory licensing, all water users in the targeted area are required to simultaneously apply for a license. While consideration must be given to existing claims, water may be reallocated without compensation in specific conditions. However, implementation counters major problems.

As further elaborated in the next section *Regulation to Serve the Colonial Hydraulic Mission*, the IWRM discourse of the 1990s and financial support from northern donors and countries promoted full state control with permit systems as the global best practice for regulation, information and revenue generation. This convinced the governments of Zimbabwe, Malawi and Kenya to further revise their laws that already included permits to a greater or lesser extent towards nationwide permit systems; and it convinced Uganda and South Africa to shift from their earlier resource regimes to permit

systems, either for all existing and new water uses (Uganda) or for all new and existing uses under specific conditions (South Africa).

Dispossession of African Water Entitlements

The early colonial water managers were aware of successful African (or, in the idiom of the time: ‘native’) water use and governance systems (Ranger 1985; Phimister 1988, cited in Derman et al. 2007). While claiming ownership over water and land resources, they followed the British colonial model of indirect and racially divisive rule. Similar to the model applied in India (Newbury 2003), they sought some degree of collaboration with existing African governance structures, and avoided destroying systems that worked as long as they did not undermine the goals of the colonial project. Thus, the colonial declaration of legal control over water resources was, at least on paper, embedded in a discourse of equity, fairness and protection of Africans, and in other wordings that have been copied in each amendment and revision of the legislation.

In Southern Rhodesia, the British South Africa Company, through section 81 of its Order in Council 1898, emphasized that the company should ensure that the “natives or tribes” have “a fair and equitable portion of springs or permanent water” (Hoffman n.d.). The 1927 Water Act also emphasized “due regard to the interests of the occupants of Native Reserves” (section 105-1). However, the concrete interpretation of ‘fair’ and ‘equitable’ implied a second-class status. Africans were almost completely excluded from decision making. The authorities established new decision-making bodies (Water Courts, River Boards or Irrigation Boards) and authorities in charge of managing ‘native affairs’. As specified in sections 105-106 of the 1927 Water Act, it was the Governor’s choice whether or not to select “any fit person whom he may select to represent the interests of the occupants of any Native Reserve in a hearing of the Water Court or as member of the Irrigation Board or River Board.”

The 'protection' provided also remained weak: a decision on new water abstraction by riparian irrigators or later by permit applicants that might "substantially affect the water supply of any Native Reserve" could not be taken unless it was first approved by the Governor. However, if the Governor certified that such water abstraction would not 'substantially affect' water supplies in native reserves, no such approval was needed. As water abstraction is incremental and impacts are cumulative, it is unlikely that any single water abstraction by settlers had enough 'substantive' impact on native reserves to require such approval.

In Kenya's Water Ordinance of 1929, the protection offered was equally weak. The Chief Native Commissioner was one of the nine members of the Water Board (section 18). The protection offered to water used by Africans is defined in section 27(3). This indicated that the Water Board should send the notice of the plan "to the District Commissioner of the district which might be affected, who shall, if in his opinion the interests of any native would be affected, cause such native to be informed of the terms of the application." As for other issues, in native reserves, all powers of the Ordinance should be exercised "subject to any laws for the time being in force relating to land" (section 75) and to the approval of the Native Lands Trust Board, the authority in charge of 'protecting' the rights of the natives (Nilsson and Nyanhaga 2009). Thus, the existence of customary water governance was recognized in the sense that it was tolerated as long as it did not conflict with settlers' interests. 'Recognition' boiled down to outright marginalization.

One Single Law for Colonial State Building

The efforts to impose one single colonial water legislation was a part of state building and vesting order among unorganized and widely dispersed settlers of different origins (and, in South Africa, just coming out of the Anglo-Boer War). Those who complied were rewarded by the water authorities who committed to protect

settlers' water uses that had been declared as being 'lawful' both against each other according to a detailed normative system and, more importantly, against Africans. The authorities' efforts to bring settler farmers, mining companies and other settlers under one law were intended to overrule their earlier polycentric regimes. Farmers usually preferred riparian regimes (Nilsson and Nyanhaga 2009; Derman et al. 2007). Permitting was a stronger tool to establish state authority and protect entitlements.

Kenya's 1929 Water Ordinance set the pace: in addition to marginalizing African customary rights, any uses based on earlier rights regimes and laws, including those that tied water rights to land, had to be converted into permits within 6 months (section 20). If this was not done within 2 years, such uses were declared as an offence and unlawful. Only enclosed springs or water 'within any land not visibly joining streams' and groundwater were exempt.

A similar effort to bring all water-using settlers under one piece of legislation was made in Southern Rhodesia, except that riparian rights for irrigation were also exempted from the obligation to apply for a permit.

The rewards for the settlers who complied with the law consisted of state backing of their claims according to the first-come-first-served principle. In Southern Rhodesia, permits were even permanent. In competition during drought years, these prior rights also determined who could use water (Manzungu and Machiridza 2005). Kenya's 1929 Water Ordinance stipulated that permits could be "of a fixed or open duration." In both countries, once permits were allocated, the legislation protected these permits also against later investments by the water authority itself. Compensation was prescribed when a permit was significantly reduced or fully taken away for the sake of a public purpose (but not in the case of an emergency).

Permit application procedures ensured the concretization of such rights. Approved plans had to be publicly announced for feedback. The applicant was required to notify the locality of the plans during a certain period (section 27(2), 1929 Water Ordinance). Every rights

holder, including exempted users, who might be negatively affected by a new water abstraction, was entitled to submit objections during that period. In Southern Rhodesia, such a rights holder could directly demand compensation from the newcomer. The amount would be set either by direct agreement or by the water authority or, if no agreement could be reached, by a body of appeal. State protection of prior rights boosted rapid investments in infrastructure on a first-come-first-served basis. Kenya's Water Ordinance of 1929 stipulated similar permit application and objection procedures.

Command and Control State Authority Structures

The laws also established the powers and composition of the water authority. The drafters of the laws ascribed major powers to the authorities to regulate and control water with the ability to impose fines and imprisonment, or both, for a long list of possible offences. In Southern Rhodesia and South Africa, specialized Water Courts were formed to rule on water allocations. Permits, where they existed, served as legal evidence in these courts. In Kenya, both permit allocation and disputes were handled by a Water Board, a parastatal upwardly accountable to the minister. Appeal procedures allowed recourse to a high court or, in Kenya, the Water Appeal Board.

Decentralization was envisaged. A handful of staff of the water authority was realistic about its implementation capacity and the localized nature of conflict resolution in their vast colonies. The 1927 Water Act of Southern Rhodesia provided for the establishment of Irrigation Boards and the option of decentralized River Boards (which would only be realized much later as part of the IWRM initiatives [Derman et al. 2007]). The 1927 Water Act also recognized basin boundaries as the appropriate boundaries for decentralized management institutions. Kenya's Water Boards could decentralize powers to District Water Boards.

The laws allowed significant discretion for the limited staff of the water authorities, not only in the actions that the authority could decide to

undertake or not, but also by allowing the state to specify the areas and water resources for which permits were required. Laws and regulations contained the option to designate specific 'controlled areas' and 'controlled activities' as those that most urgently required state oversight. In so-called designated and reserved areas, permits were temporary and conditions were tighter. In addition, stringent intervention was possible when and where water was insufficient due to droughts.

Although permits became the main tool through which the new authority recognized settlers' water abstractions as lawful and deserving of the authority's backing and protection as a water 'right', this backing remained conditional. The new laws gave (and still give) power to the water authorities to change, vary, reduce or cancel permits, especially in so-called controlled areas, for controlled activities or during droughts and in specific circumstances. Also, water authorities could (and still can), in many cases, reduce or completely withdraw permits when the volume of water permitted had not been used for 2 or 3 years. Also, the volume of water allowed for abstraction could be reduced when less water was used than the capacity of the work mentioned in the permits. They could also reduce volumes for prioritized or exempted uses. The 'opinion of the water authority' was generally sufficient to legitimize these top-down actions.

Last but not least, the main caveat in permit systems (at any time in history and across the world) remains: in no way does a water 'right' mean that the water authorities guarantee that the water volumes indicated on paper will be made available. The availability of water resources primarily depends on nature, particularly in areas with limited water storage and infrastructure as in Africa in the early twentieth century and even today. Even with significant storage capacity, water cannot be reliably guaranteed. At best, minimum quantities can be reserved and priorities can be set.

The foregoing section *Dispossession of African Water Entitlements* focused on the entitlement dimensions of the water law: is the water use lawful or not? Further regulation

was envisaged through the conditions attached to permits and other legal tools. The next section *Regulation to Serve the Colonial Hydraulic Mission* mainly focuses on

Southern Rhodesia and Kenya, and explores how regulation of information provision, water allocation and revenue collection served the hydraulic mission.

Regulation to Serve the Colonial Hydraulic Mission

Technical Information

Permitting provided the water authorities with considerable technical information for infrastructure development. In the early days of the hydraulic mission, infrastructure and domestic and productive uses were all small-scale. Water users could apply for permits either as an individual or collectively, for example, by petitioning for a combined irrigation scheme with an Irrigation Board, as in Southern Rhodesia. The latter could then apply for government irrigation loans. In Kenya's 1929 Water Ordinance, two or more future operators could apply for a 'private project' or a 'community project'. While most of the earliest acts stipulated that pollution was an offence, waste discharge permits were only introduced later.

For the two types of permits that were required, the first was a temporary or provisional permit or authorization of a construction plan. Highly detailed plans for infrastructure ('in Indian ink' – as in section 23[c] of Kenya's 1929 Water Ordinance) and 'workmanship' in construction were required and well inspected before approval. Construction had to be approved before a second permit could be issued for factual water use, abstraction, diversion, storage or damming, and sometimes drainage. Safety criteria were also in place for large-scale dam construction and operation.

These meticulously defined application procedures, conditions, and supervision and use conditions not only protected those with prior rights, but also served the earliest water authorities and settlers alike: it provided hydrological and engineering information for

their small-scale infrastructure in often largely unknown areas, with unknown, unpredictable and highly variable precipitation. Permits were a way to garner, systematize and institutionalize this valuable hydrological and engineering knowledge in a context in which there were no other ways to collect and store such technical information. However, this need changed soon. Hoffman (n.d.) commented on the experiences with the 1927 Water Act of Southern Rhodesia, that water courts' requirement for information reduced once an irrigation department that collected this information was established.

Allocation through Prioritization

As mentioned, water allocation was primarily implemented through the process of application, examination and approval or rejection of permit applications for – at the time - *new* water abstractions. In this process, water authorities were to 'consider' a specified range of factors that were to influence who, in a context of competition for water, should receive water and for what purpose, rather than a concurrent other person or for another purpose. Among permit applicants, the prior date system of the first-come-first-served principle in Southern Rhodesia even applied when two investors applied for the same limited volume of water: the person who had submitted his application first to the Water Court was given priority. Going a step further than 'considerations', the acts or later regulations and/or policies ranked priorities for water allocation, including during times of drought and water scarcity.

In the 1927 Water Act of Southern Rhodesia, users exempted from an obligation to apply for a permit were so-called Primary Water Uses. These uses were given the highest priority, although the minister retained the power to change such uses and to charge fees for such uses. Primary use was defined as: 'the use of water for domestic purposes and for the support of animal life' ('domestic' used to include some gardening in and around homesteads). In the 1898 Order in Council, this was quantified at 50 gallons (~ 228 liters/person/day). This was introduced to protect poor white farmers (Manzungu and Machiridza 2005).

For all other uses, the first priority was given to infrastructure development for state enterprises such as railways, development of small colonial towns and hydropower. For example, in Kenya's 1929 Water Ordinance, 'state' projects took precedence over the other four classes of projects ('public', 'urban', 'community' and 'private'). In both Kenya and Southern Rhodesia, investments in infrastructure by the state were further promoted by stipulating the legal option to reserve land and water for future dam building or to reserve certain public waters. In South Africa, state water works were, and still are, prioritized above non-state use without the requirement for a water use permit. In all cases, the state should compensate the losses borne by prior lawful water users.

The next two priorities in Southern Rhodesia's 1927 Water Act reflected the outcome of the struggle between white farming and mining interests in the colony's Gold Belt (Derman et al. 2007). The second highest priority was given to water for secondary purposes: irrigation and watering of stock other than farm stock. In line with the colonial goals, 'economic use' was further promoted: 'If a farmer has land well suited for irrigation and there is a stream that can be economically utilized, he can acquire the right to use all the water for irrigation even though it may leave others without water except for primary purposes.' The third highest priority was for tertiary purposes, which included the mines and railways.

The 1929 Water Ordinance in Kenya was less explicit about prioritizing exempted or other

uses. It stipulated that the water authority *may* 'reserve' water for micro-scale domestic uses defined as 'household and sanitary purposes, the watering and dipping of stock and the essential requirements of such farming operations which are not of an industrial nature', provided 'such abstraction or use is made without the employment of works'. Handheld equipment was not defined as 'works'. However, as in Southern Rhodesia, the water authorities retained the power to intervene in any water use, including for water uses exempted from the obligation to apply for a permit or prioritized water use.

Revenue Collection

Water permits also enabled the state to collect revenue to finance the new water authority structures. The fees were partly seen as compensation for the state service, and partly legitimized by a notion that the state – as owner of water resources – can request a payment for its use. One-off payments were introduced for permit applications and recurrent payments were charged for water use. The principle of fees as compensation for services delivered by the new state was well articulated in some instances, such as users' (costly) payment for hearings in the Water Court in Southern Rhodesia. Section 97 of the 1929 Water Ordinance in Kenya clarified this difference as follows: 'fees' are for services and 'charges' are for water diversion, abstraction, storage and use.

In summary, permit systems were rooted in the declaration of colonial ownership of water resources, categorically dispossessing Africans of water rights. Internally, water legislation was part of state building among the relatively small number of settlers. The legislation enabled state investment and stimulated settlers to invest in infrastructure for new water abstraction on a colonial first-come-first-served basis.

As discussed in the next section *Post-independence Entitlements: Consolidating Marginalization*, in spite of very different goals and contexts, current permit systems still contain most of these elements, with three

exceptions. First, colonial ownership of water resources shifted to custodianship vested in the independent state. Second, whereas African water users were initially explicitly or implicitly excluded, the post-independence laws included all water abstractors and forced them to convert to permits, which consolidated informal water users' marginalization and criminalization,

and increased logistic requirements (see next section). Third, permits were expanded to include all water resources with more complex conditions, further exacerbating the logistical challenges for water authorities in implementing what the law sets out for them to do (see section *Post-independence Regulation: An Administrative Nightmare*).

Post-independence Entitlements: Consolidating Marginalization

State Goals in Dual Economies

Since the 1920s, states and contexts have profoundly changed. Post-independence constitutions and state policies focus on broad-based economic growth, poverty alleviation and equality before the laws and other rights-based approaches (Hellum et al. 2015).

Rapidly growing populations have become younger, more mobile and partly urban. The race-based and capitalist colonial minority economy and African agrarian societies started to mix into a dual economy. This consisted of, on the one hand, a wealthier middle class employed in formal capital-intensive agribusiness, mining, industries and services sectors with a growing number of poor wage workers; and on the other hand, a much larger segment of poor and just-above-poor informal workers, many of whom are rural producers who primarily depend on water-dependent agriculture and off-farm informal work.

The hydraulic mission of the formal segments continued from the colonial period through to after independence. States mostly focused on large-scale infrastructure development, operation and maintenance, which primarily supported the expanding formal sectors as well as large-scale irrigation and few smallholder schemes. Hydropower supported urban and – to a much lesser extent - rural electrification. African states that became cash strapped as a result of the stern structural adjustment programs of the

1980s had to slow down investments (Mehta et al. 2017). The IWRM discourse shifted attention further away from infrastructure development towards regulation, as reflected in the revival of permit systems. The 1990s and 2000s were 'lost decades' for the hydraulic mission (van Koppen and Schreiner 2014b). Governments became more dependent on the mobilization of foreign public and private capital to continue a hydraulic mission of large-scale infrastructure. State support for smallholder irrigation also reduced.

In the informal rural economies, people continued to invest privately in water infrastructure for self-supply governed by customary water law. Their numbers significantly increased as a result of various factors: rapid growth of populations in need of food and income, new informal and formal market opportunities, and the expanded availability of water technologies for lifting and conveying surface water and groundwater, such as polypipes for gravity flows, small petrol pumps or electric pumps, where electrification reached (Woodhouse et al. 2017). Solar-powered pumps will further boost expansion. Although the sizes of irrigated land or water-dependent enterprises per household are generally small and barely meet basic health, food security and income needs, the high numbers of investors render water investments governed by customary law a much more important contributor to broad-based economic growth than public irrigation investments (Giordano et al. 2012). However, these changes

have not been reflected in the water legislation. On the contrary, inequalities have widened.

State Custodianship and Imposing Nationwide Conversion

After independence in Kenya (1963), Malawi (1961) and Zimbabwe (1980), one change in the post-independence legislation was a simple stroke of the pen. 'Colonial ownership of water resources' was replaced by 'custodianship vested in the state' (in Kenya and the 2013 Water Resources Act of Malawi) or in 'the President' (in Malawi's earlier 1969 Water Resources Act and still in Zimbabwe). The 1995 Water Statute in Uganda also adopted state custodianship. Finally, the post-1994 South African state also shifted from a combination of riparian principles, private groundwater, Government Water Control Areas, permits for forestry, and other legal tools to state custodianship of all water resources. For the new custodians, permits (and exemptions) continued to be the sole method to declare water uses as lawful. The neoliberal IWRM discourse, which saw water as an economic good, started promoting permits as the best tool for increased revenue collection, a welcome idea for cash-strapped states.

Implicitly, the shift to custodianship was accompanied by a second change: the target group of permitting expanded to include all citizens abstracting water above the threshold in Malawi, South Africa (for new water abstractions) and Uganda. The post-independence laws of Kenya and Zimbabwe continued to refer to the continued validity of specific laws for communal areas. However, by also referring to 'everybody', it remained unclear whether water abstractors in communal lands were obliged to apply for permits.

The meaning of 'everybody' was initially ambiguous. In the early colonial legislation, there was a clear differentiation between 'Africans' and 'everybody'. Because of this comparison, it was clear that 'everybody' referred to all non-African settlers, who had to be brought under one piece of legislation as part of the young colonial state. In later texts, race-based connotations were

disappearing. One of the last explicit expressions of racial divisions was in the post-independence 1972 Water Ordinance of Kenya, subsidiary legislation, which set allowable quantities for exempted uses as 50 gallons (about 228 liters) per day per head for non-Africans (Europeans and Asians) or 10 gallons per day per head for Africans. Three years earlier, the 1969 Act of independent Malawi set the same 10 gallon quota for 'high density' areas, which was the common expression for African areas, but 300 gallons for low density (in reality, meaning: white and/or middle-class) areas. After this, all post-independence acts, revisions or newly adopted water laws referred to 'everybody' abstracting and using water. So, 'everybody' implicitly became all water abstractors, both prior and new users.

In fact, even before independence, the colonial state may well have welcomed individual Africans applying for a permit. After all, such applicants would have recognized the legitimacy of the colonial powers' self-proclaimed ownership of water resources at the basis of permits. For individual African investors, it might have been attractive. Permits intrinsically encourage and reward individual investors, one by one, to obtain stronger entitlements than non-permit holders. Hence, Africans could also have sought the legal backing of the colonial powers to defend their own water uses *vis-à-vis* settlers *and vis-à-vis* other Africans. The latter served the colonial goals of divide and rule and the weakening of customary arrangements. Also, Africans were still excluded from decision making. In any case, later revisions and amendments consistently refer to 'everybody'.

Thus, the target group of permits expanded from the colonial minority (*de jure* and *de facto* entitled to take up water and encroach on prior African uses) to cover the many descendants of the African water users who had invested in water since time immemorial and had deliberately been excluded from the formal permit system. Permits continued to be the primary method to ensure one's water use was lawful, and granted greater legal protection than for those using water under exemptions. Entitlements remained the 'carrot' enticing water users to apply for a permit, but now not only for new water abstractions but

also – supposedly – to convert all water uses governed under customary rights into a different legal system. The granting of water entitlements continued to be part of state building. After all, in the words of a water authority official from Tanzania (pers. comm. 2007), facing the same situation as the five countries discussed here: ‘one could not exclude a majority’. However, this exacerbated inequalities in all five countries, as explained below.

Continuing Entitlements in the Formal Economies

In Kenya and Malawi, the early permit systems continued as before without changes for foreign and national water abstractors in the formalizing (and increasingly less race-based) economies. In Zimbabwe, the riparian doctrine disappeared and colonial permits in perpetuity became time-bound as a measure to redress inequities from the past. However, the envisaged reapplication for permits by the pre-1998 – largely white – permit holders never took place. Most permits from the colonial era continued as before (Makurira and Viriri 2017).

As mentioned in the section *Current Implementation of Permitting*, in Uganda, permits were newly introduced in 1995. Water authorities have targeted those individuals and entities whose water use has a potentially high impact on water resources or other users.

In South Africa’s 1998 National Water Act, after quite some negotiation and lobby by the vested water users, water entitlements under the colonial legislation, including their huge inequities, were recognized as ELUs. Only post-1998 water abstraction required permitting. The envisaged process of compulsory licensing, which, among other things, was intended to enable the redress of historical racial inequalities, has only been partially implemented in three pilot cases. In

none of them did access to water move from ‘the haves’ to the ‘have-nots’.

So, many existing formal users maintained their existing entitlements. Existing users without permits and new investors obtained stronger entitlements than non-permit holders through the administrative act of applying for a permit from a state apparatus that they can access relatively easily. As in the colonial era, their lawful water uses keep encroaching one by one on non-permit holders’ existing and future water uses.

The tradability of permits, strongly promoted in the IWRM discourses that kept referring to Chile’s and Australia’s water markets, would have added an even stronger entitlement. Permit holders would have obtained water entitlements on a first-come-first-served basis at relatively low fees, and sell their unused water resources once competition had grown and there was a higher monetary value for water. In South Africa, the National Water Act (1998) included the option of water trading, but it has recently been superseded by the introduction of a ‘use it or lose it’ policy and a policy position to prevent all water trading. Section 52 of the 2016 Water Act of Kenya also stipulates that all permitted water that is not being used reverts to the state. The 2013 Water Resources Act of Malawi does the same, but allows some leasing; if longer than 6 months, it has to be approved by the water authority (section 55 of the Act). However, water saved can be transferred – but not during a drought (section 63). In Zimbabwe, transfer of permits is only possible if approved by the Catchment Council. Uganda’s Water Statute does not refer to any tradability.

Before discussing whether and how these permits can still serve as regulatory tools, we first contrast these continued entitlements for large-scale formal users with the weakening legal standing of existing and new water users governed by customary law.

Dispossession of Prior Water Investments in Informal Economies

In spite of the policy intentions to redress past injustices (in South Africa and Zimbabwe) and some new moves towards rights-based approaches (in South Africa and Kenya⁴), the historical inequalities in rights to water for productive purposes have only widened. The existing legal tools in the legislation with the potential to recognize customary law in Kenya, Malawi, South Africa and Uganda have not been used.

The general pattern is as follows. As mentioned, whereas the earliest colonial laws in Kenya and Zimbabwe recognized the existence of African customary water rights regimes and defined their 'protection', which meant a marginalization, the new laws *de jure* imposed that 'everybody' using water above the threshold governed by customary law was obliged to convert decades if not centuries of prior water infrastructure investments and use into permits. This shifted all burden of proof of even the mere existence of their water uses to the informal users. It also reduced people's investment and sharing arrangements into passive 'use', and continued the colonial written laws and arrangements about communal lands (as in Kenya and Zimbabwe). Beyond the five countries, Tanzania is particularly illustrative as it seemed to recognize customary law. Tanzania's Water Resources Management Act (2009, section 52) explicitly mentions: 'customary rights held by any person or community in a watercourse shall be recognized and is in every aspect of equal status and effect to a granted right'. However, such rights still need to be recorded according to the normal application procedures within 2 years after the promulgation of the Act.

Thus, all legislation assumed that customary arrangements could simply be converted into permits within the state's logistic capacities and

without eroding these arrangements. The options of collective permit applications exist, but they imply major issues of membership, elite capture, and conflicts between those who prefer applying as individuals and those applying as groups. Moreover, it ignores the fundamental differences between permits and customary law, as illustrated in the section *Customary Water Law*, for example, about the notion that water cannot be owned by anyone and as being 'given by god'. Not surprisingly, in response to the obligation to apply for a permit and pay a fee, smallholders invoked that water is given by god; notions of state ownership were contested.

On top of shifting the burden of proof and imposing an impossible conversion, the legislation defined water users without permits as criminals committing an offence, unless they fall within the categories of exempted use. For the minority of colonial settlers, the strict conversion to one legal system served the building of a new state apparatus. However, in post-independence legislation, decades of small-scale informal investments were criminalized or their exempted use weakened relative to permit holders. This general pattern slightly differed in the five countries.

Zimbabwe's current Water Act of 1998 (section 48) continues the same wordings of section 105 of the 1927 Act (as in italics), only adjusting for the renamed institutions.

1998: The Minister shall '... have due regard to the interests of occupants of Communal Land ...' (1927: *Governor shall '... have due regard to the interests of the occupants of the Native Reserves ...'*).

1998: The Minister may nominate 'any fit person to represent the interests of the occupants of any Communal land before the catchment council' (1927: *The Governor may appoint 'any fit person whom he may select to represent the interests of the occupants of any Native Reserve' to Irrigation Board or River Board, or Water Court hearing*).

⁴ The South African constitution (RSA 1996) refers to human rights to water and food. However, in South Africa, regulations defined this right to water as a right to affordable and nearby infrastructure services for domestic uses of 25 liters/per capita/per day. This is lower than a global consensus on the human right to water, including the rights proposed by the World Health Organization (WHO), which recommends 50 liters/per person/per day as the minimum. Domestic water uses represent less than 1% of available water resources.

1998: if a planned water abstraction or any matters 'affecting the water supply of the Communal Land' is 'likely, in the opinion of the catchment council, to substantially affect the supply of water for primary purposes of the occupants of any Communal Land, approval of the Minister has first to be obtained' (1927: *If a planned irrigation scheme, or decision of the Water Court, will 'substantially affect the water supply of any Native Reserve', approval of the High Commissioner needs to be obtained first. But, this is not needed if the water supply is not substantially affected*).

The protection of Primary Uses, introduced to protect poor white farmers (Manzungu and Machiridza 2005), continues for 'everybody', but is qualified: the Catchment Council can take even those vital waters needed for livelihoods away.

In **Kenya**, the same principle with which the 1929 Water Ordinance sought to bring all settlers under one law is repeated in section 7 of the 2016 Act: 'Upon the commencement of this Act, no conveyance, lease or other instrument shall convey, assure, demise, transfer or vest in any person any property, right, interest, or privilege in respect of any water resource except as may be prescribed under this Act'. Each of the subsequent legislations (Water Ordinance of 1929, Water Acts from 1973 to 2016) specified that all powers and functions of the Act that affect communal land will be exercised and performed subject to any written land relating to that land (Water Act 2016, section 138).

Interestingly, after independence in 1963, the 1972 Water Act, Chapter 372, Subsidiary Legislation, proposed to address the new situation by including the option of collective 'community (reserved areas) permits'. County councils should submit such an application 'on behalf of' the concerned persons residing in a reserved area. Such permits 'need not specify individual diversions, abstractions, obstructions or uses of water, but there shall be embodied in it a condition that all individual diversions, abstractions, obstructions or uses of water, not exceeding the total amount sanctioned, shall be approved and authorized by the permit holder' (who needs to keep a record). This explicit option

disappeared in later versions. However, permits can be obtained by 'a body of persons whether incorporated or unincorporated' (section 2).

The 2016 Act (section 135[d]) gives, in principle, some room to avoid such conversion by declaring 'rights existing immediately before the commencement of the Act' as 'deemed to be a right conferred by a permit under this Act' by agreement or otherwise'. However, this option has not been operationalized.

South Africa's National Water Act (1998), which protects Existing Lawful Use under former (colonial) acts as lawful under the Act, is silent about the legal standing of customary water rights regimes within or outside the former homelands. Section 34 gives the option to the water authority to declare water uses just before 1998 as lawful, but this has never been used for small-scale black farmers or inhabitants of former homelands. So, the historical marginalization is reinforced.

When the **Ugandan** government adopted the Water Statute in 1995, no existing water user had permits. Section 42, which stipulates transitional arrangements, recognizes the continued lawfulness of works that were lawfully constructed in the past, but it requires their registration within a certain period. Without that registration, the lawfulness lapses and the use becomes unlawful.

Malawi's 2013 Water Resources Act is the only act of the five countries that refers somewhat more explicitly to customary law, but only in cases of others' new applications for permits. In section 41, which lists the 'considerations' during an approval process of permit applications for new water abstractions, it mentions (section 41[i]): 'the existence of any traditional community and the extent of customary rights and practices in, or dependent upon, the water resource to which an application for the license relates'; and in section 43(e), 'any reasonable requirements of a community'. Such explicit requirement is certainly relevant in the case of large-scale land and water deals and related claims to water resources. However, without due process of a rigorously implemented process of permit application, notification, approval and appeal, recourse by affected parties is very limited. Moreover, both the Water Resources Act, Chapter 72: 03 of

1969, and the 2013 Water Resources Act require the conversion of any previous water use into a permit within 6 months (1969 Act) or 12 months (2013 Act).

The legislation in the other four countries also stipulates 'considerations' that need to be taken into account when approving a permit request. However, they only refer to existing lawful uses, without further defining what lawfulness means. Section 27(b) of the South African Act refers to the 'need to redress the results of past racial and gender discrimination', but only as one of the considerations.

Ironically, as long as permits and exemptions are the sole tool to declare water uses as lawful, one could counteract the above-mentioned critiques with the argument that such superior entitlements are finally opened up to all citizens abstracting water. However, that would only be the case if water authorities could offer equal opportunities to issue permits to 'everybody', and ensure equal legal standing of exempted uses. However, the administrative nature of permit systems is bound to result in unfair treatment, as explained below.

Applying for permits poses significant demands on water users, who have to provide relevant information on their water use to the state. For large-scale water users with complex water use demands, the requirements of permit applications are more complex, but they generally have sufficient technical and financial (and legal) resources to be able to deal with these requirements. For small-scale water users, completing the permit applications can be daunting, and they face more challenges in

accessing the offices to submit their applications. Therefore, this administrative process is advantageous for administration-proficient, large-scale water users, both nationals and foreigners, and disadvantageous for small-scale, rural users. This is unfair treatment.

Moreover, as already mentioned, exempted micro-scale water uses are disadvantaged even in Zimbabwe with the high priority Primary Uses, as long as these users lack effective representation in the Catchment Councils, which can still curtail such uses.

Last but not least, even water authorities admit that the administrative burdens are so excessive that they cannot be solved just by throwing more resources into the implementation. As also mentioned, the second edition of South Africa's National Water Resource Strategy (DWA 2013a) recognized that the state lacks the capacity to effectively provide permits even just to post-1998 new entrants. As elaborated next, this is the result of the increasing administrative burden arising from a trend in all of the five countries, in which both the people and water resources subject to permitting expanded and, as a result, the conditions became increasingly restrictive. This trend started in the colonial era and intensified over time, especially in the post-1990s revisions. This not only inflicted administrative injustices on those who are most difficult to reach, but also prohibited effective implementation of fit-for-purpose, lean, credible and transparent regulation. The independent state weakened as the regulator, which widened inequalities even further.

Post-independence Regulation: An Administrative Nightmare

More Water Users and More Water Resources

Over time, water authorities and global players increasingly put their faith in permit systems as tools to neatly regulate water uses. In addition to the above-mentioned massive expansion of water users across a wide geographical terrain subsumed under permit systems, the water resources and the domains for regulation multiplied as well. This added immense logistical burdens and further over-extended the administrative capability of the state to implement the legislation.

Each amendment and revision of the water legislation declared more water resources, in particular groundwater, as 'public' instead of private or exempted, thus requiring permits. The number of 'controlled areas' also increased. South Africa's 1956 Water Act, for example, created Government Water Control Areas to be managed through permits. The same Act already included 'the control of activities which may alter the natural occurrence of certain types of atmospheric precipitation'. However, it still largely considered groundwater to be a private resource till 1998. The revised and later laws in Kenya (Water Ordinance 1972 and Water Act 2016) and Malawi (Water Resources Act 1969) already included permits for groundwater abstraction (but continued to exempt springs within land boundaries [Kenya] or private water defined as pans or springs within private land boundaries [Malawi]). In the most recent laws (Kenya Water Acts 2002 and 2016, Malawi Water Act 2013, and South Africa's and Zimbabwe's 1998 Water Acts), *all* water resources are subject to permitting (or exemptions). After all, the principles of IWRM taught: 'all components of the water cycle such as groundwater, surface water, evaporation, clouds and rainfall are recognized as being interdependent and forming part of a single water cycle' (Zimbabwe 1998 Water Act section 6.2.a). In Uganda, all water resources that were claimed as 'reserved to

the government' in the 1969 Public Land Act (section 27.10) shifted to be the domain for state management in the 1995 Water Statute.

It is true that all laws continued to provide the flexibility for the state to focus on critical areas and resources: designated or controlled areas and activities, surface water or groundwater shortage areas, groundwater conservation areas, protected areas, government water control areas, dams above a certain storage capacity, or areas that are declared as 'drought situations' with specific rules for water use under drought conditions; or the opposite: designating areas with less strict controls, for example, where no groundwater permits are required (1998 Zimbabwe Act). However, little use seems to be made of this flexibility.

More Regulation and Information Requirements of More Activities and Uses

Permit application procedures were, and continued to be, resource intensive. Applications were often phased, requiring two subsequent authorizations and permits, each including a specified period for public notification. For example, Uganda's new 1995 Water Statute requires separate permits for works and for surface water or groundwater abstraction (and one-year permits for drilling companies). In Kenya, the obligation to apply for both construction and use permits also continued.

Information requirements intensified. Permit holders were obliged to install devices to measure actual water use, and to provide information about such uses to the water authorities. Kenya's 1972 Water Act up until the Water Act of 2016 (4th schedule, section 2) and Malawi's Water Resource Act of 2013 (section 68) specified that anyone constructing a well should keep a record with '(a) measurements of the strata passed through and specimens of such strata; (b) measurements of the levels at which water was struck'; and (c) measurements of the quantity of water obtained [..]'.

The activities falling under 'water use' also expanded. For example, in South Africa in the 1970s, when afforestation became a 'streamflow reduction activity', this required a permit as well. In all of the five countries, the second and later generations of water legislation included waste discharge as also requiring a permit, with a concomitant application fee (waste discharge had already required a permit in South Africa under the 1956 Water Act).

Last but not least, in the latest rounds of revisions, the environment became a significant user in its own right, requiring environmental flows that had to be assessed, implemented and enforced. All current acts stipulate a high priority or even a reserve for environmental flows. For example, priority of use in Zimbabwe's current catchment outline plans is based on the following order: primary uses, environment, urban, industry, mining and agriculture (Makurira and Viriri 2017). In South Africa, the ecological reserve safeguards environmental flows and aquatic ecosystems. Estimates of the reserve are at some 20% of average flow, although this varies from one resource to another. A specific reserve has to be determined for each significant water resource. Because of its high priority, such assessments were to precede the consideration of any permit applications to use water. However, in the four other countries, water resources are still underdeveloped, so the available water resources are environmental flows by definition and, in principle, no quantitative assessments or interventions are required.

These further activities and uses required more hydrological, engineering and other information about larger and inter-basin areas than what was needed for the small-scale infrastructure of the 1920s. Specialized state departments, universities, consultancy firms and other knowledge centers emerged to develop that information. Permit applications by the few individual investors may have been useful ways for the colonial water authorities to garner hydrological and engineering information, but by now an intensive legal procedure is probably the most ineffective way to collect information from users. Moreover, the requirement to install measuring devices and report

on water use to the authority discriminates against the many informal water users who lack money for such meters or measuring devices (Manzungu and Machiridza 2005).

Shorter Duration and Cancellation

The duration of permits has also become shorter, warranting faster renewal with increased logistical requirements. Kenya's 1972 Water Ordinance reduced the duration of permits to a maximum of 25 years with the possibility of renewal (section 95). In contrast, a duration of 5 years is common under the 2016 Water Act. In Zimbabwe, permanent rights remained in force until 1998, after which all permits became temporary. In general, permit durations under the current legislation vary from 2 years but 'generally not more than 5 years' (Uganda) to not more than 40 years (South Africa).

In theory, shorter durations increase the state's regulatory powers, as each obligatory renewal offers an opportunity to change permit conditions. As indicated above, in Zimbabwe, the shift from permanent to temporary permits was expected to serve the goal of freeing up water used by former colonists for more equitable distribution. However, the many inactive permits in today's database in this country highlight that the expectations of stronger control have not been met (Makurira and Viriri 2017).

Water authorities have the option to vary or completely cancel a permit that is not used as agreed in its conditions (e.g., in Kenya's 2016 Water Act [section 53] and Malawi's 2013 Water Resources Act [section 51]). If cancelled or varied for a public purpose, compensation has to be paid. If applied, this option also requires considerable administrative resources.

Lower Thresholds of Exemptions

As shown in Annex 2, there was also a decline in the thresholds of the exemptions from the obligation to apply for a permit, as for domestic uses, and 'non-commercial', 'subsistence',

'household' micro-scale productive uses. A startling example of this tendency to tighten exempted uses is South Africa. Here, the Water Act of 1998 introduced General Authorizations as another tool, besides the exempted *de minimis* uses called Schedule One uses, to exempt water users from the obligation to apply for a permit. General Authorizations can be declared for a specific water resource or for a certain water user category. While no permit application is required, generally authorized users may be obliged to register their water use and to pay fees. At the time, the rationale was to reduce the state's administrative burden for uses of relatively 'negligible' quantities in areas where sufficient water resources are available. So, in less water-stressed catchments, the thresholds can be higher. However, in 2016, a newly gazetted General Authorization further *reduced* the authorized quantities in stressed basins to a volume that corresponds to 0.2 ha of irrigated area for abstraction of surface water. This is even lower than the common interpretation of exempted so-called Schedule One uses of about 1 ha (Schedule One is not formally quantified).

Revenue Collection

As mentioned, in line with the global IWRM discourse since the 1990s and in response to structural adjustment programs, payment for permit applications and for water use was revived and expanded as a new condition of water use. South Africa is the only country that clearly specifies the services in return for that levy by calling it a 'water resources management charge' on all registered water use (it also has an infrastructure charge for users who receive their water via state-owned infrastructure). The water resources management charges for small-scale black users are incrementally introduced over a five-year period. Other countries are less clear about the grounds. Suggesting ownership, the subsidiary legislation of Malawi's 1969 Water Resources Act even called the annual payment for a water right a 'rent'. The 2013 Water Act of Malawi continues to differentiate between payment

for 'services provided by a public agency' (section 119[a]), charges for licenses for abstraction and use (section 119[b]), and permits for waste discharge (section 119[c]).

Whatever the name, administrative burdens increased. Charges are also levied on those using relatively small amounts of water under permits or general authorizations. This does beg the question as to whether the revenue generated from these small-scale users is higher than the costs of billing these users and collecting revenue from them. This question of sound public administration does not appear to have been explored.

In sum, the foregoing showed the hugely increased administrative burdens in the issuing of permits of a shorter duration to a wider range of people for all of the nation's water resources and their expanded uses, activities and information requirements, with the additional tasks of revenue collection. This would have required significant institutional decentralization and strengthening, especially when international donors who initially provided funding support for institutional strengthening reduced their funding. However, such institutional strengthening hardly happened either.

Under-resourced Water Authorities

For law implementation, the latest rounds of law reforms stipulated some decentralization of the highly centralized water authorities. Some of the post-independence legislation revitalized the decentralization of water management and regulation to the catchment level, as had already been referenced in earlier legislation. In Zimbabwe, for example, the 1998 Water Act stipulated that permit allocation by the national Water Court was to be decentralized to seven participatory Catchment Councils, which, being based on catchment boundaries, crossed the historical boundaries of territorial segregation. River Boards transitioned into sub-catchment councils in charge of monitoring and fee collection. Sub-catchment councils are represented in the catchment councils. Water managers employed by the Zimbabwe National

Water Authority provide a secretariat function to each of the councils.

In Kenya, the decentralization of the issuing of permits to districts under the 1929 Water Ordinance continued under the new legislation to basin-level structures. However, the delayed revision of the water legislation, and the changes in government arrangements (mainly as a result of the introduction of county governments under the 2010 Constitution), resulted in some confusion over the roles and responsibilities of different state bodies for water management.

As mentioned, Uganda had no centralized water authority and had just created local government structures when it introduced a permit system in the 1995 Water Statute. Its 1999 Water Policy builds its water management around the decentralized local and district governments and their bylaws and local leadership, elders and other customary water arrangements. Issues that cross the district boundaries were to be addressed through higher-level coordination, for example, with the allocation of specified water flows to the districts concerned. In the longer term, it was also foreseen that local government would issue permits. However, this proposed decentralization has been overtaken by the creation of four Water Management Zones into which the country has been divided.

The 2013 Water Act of Malawi envisages the possibility of the establishment of catchment agencies. Under this clause, the Shire River Basin Organization is currently being established, with support from the Shire River Basin Management project (Mulwafu and Mwamsamali 2017).

South Africa's National Water Act (1998) made the establishment of Catchment Management Agencies (CMAs) possible (but

not mandatory), with the potential, if the function is delegated by the Minister, to issue permits. However, by 2016, only two of the nine intended CMAs had been established and permitting remains a function of the national department. The logistical burdens of centralized permit systems are well illustrated in South Africa. The requirements for processing a permit application, including the need for determination of the ecological requirements in the affected water resource, resulted in lengthy delays in finalizing applications, in some cases up to 8 years. As a result, the Department of Water and Sanitation had to put in place a special project to address the significant backlog in water use permit applications. A requirement has also been put in place for the maximum time allowed for the processing of a water use permit application to be 300 working days.

Obviously, in any of the countries, the fact that responsible water users, who try to comply with conditions of submitting their completed forms, do not get a prompt state response for months if not years undermines the legitimacy of the state as regulator in the public interest. However, a rushed issuing of permits undermines the regulatory power of permits and continues the marginalization of the non-permit holders who cannot and need not be reached.

We now turn to exploring answers to the pertinent question: what options exist for a reconfiguration of water use authorization into a lean tool for effective regulation and sustainable revenue generation that supports national goals and builds on the current implementation practices described in the section *Current Implementation of Permitting?*

Options to Decolonize Statutory Water Law

Water Use Prioritization to Achieve National Goals

A proposed option is a hybrid approach which combines, on the one hand, the strict regulation of the few high-impact users with the strongest impacts on water uses and aquatic ecosystems through targeted permits; and on the other hand, the legal protection and further development of customary investments and water sharing arrangements of small-scale users. The targeting of permits resembles Kenya's differentiation between categories A, B, C and D, with most efforts directed at the relatively small number of high-impact category D users. In practice, South Africa, Uganda, Malawi and, to a lesser extent, Zimbabwe (Manzungu and Machiridza 2005) also primarily focus on the few high-impact users, although without the formal categorization as in Kenya. A hybrid approach goes further: it replaces entitlements through permits by *prioritization*. In order to achieve such prioritization, permits are targeted and living customary law becomes the starting point to encourage private infrastructure investments and mediate in conflicts among the other water users.

The most important change of a hybrid approach is the ending of the past 'wrong' that permits gave stronger entitlements than water uses by non-permit holders, which led to the concentration of entitlements among the few high-impact users, and the criminalization, marginalization and unfair treatment of the small- and micro-scale water users. Water allocation stops being dictated by the division between permit holders and non-permit holders. Instead, water users governed by customary rights have an equal legal standing as permit holders; water allocation aligns with state goals of broad-based economic growth, poverty eradication, employment creation, and the realization of constitutional commitments to equal treatment before the law and the progressive fulfilment of everybody's basic human needs.

Water allocation can contribute to achieving such goals by *prioritizing* uses of water as an intrinsically shared resource crossing plural water rights regimes. Such prioritization applies to all water users and hence overcomes remnants of past territorial and institutional segregation. When water resources are still plentiful, prioritization guides state investments in storage and conveyance infrastructure so that, ultimately, water resources will be distributed according to national goals. In times and areas of water scarcity during droughts, prioritization guides water allocation and conflict resolution. When most water resources have already been developed and distribution is a zero-sum game, as in parts of South Africa, prioritization is critical to guide conflict resolution and any new water abstractions.

Constitutional rights to water, health and food provide the main yardstick for such prioritization, as also promoted in national⁵ and international debates (Hellum et al. 2015; HLPE 2015; van Koppen et al. 2017b). These binding commitments highlight an absolute priority for access to sufficient water for domestic uses and also for food production, where people are dependent on growing at least a portion, if not the entirety, of their food for consumption or growing sufficient crops for sale which will provide an income to buy food. Small-scale water users who mobilize capital, skills and labor for infrastructure development using their own money, and who are lifting themselves out of poverty at no cost to the tax payer, should certainly be encouraged, also if this means that wealthier users have to give up some of their water allocation.

Water legislation, regulations and policies include tools for prioritization, which should be adjusted to reflect the above-mentioned national goals. In all the five countries studied, a high priority is given to water for domestic uses, but small-scale productive use is not supported as yet, on the contrary. The legislation ranks broad sectors without considering intra-sectoral

⁵ Kenya's 2016 Water Act declares the human right to clean and safe water in section 63, which falls under water services. In theory, this could be interpreted to include water services for small-scale productive uses as well.

differentiation, local contexts and the fact that many rural people need water for both domestic and productive uses. In particular, smallholder agriculture, which is the mainstay of many of the rural poor, is considered together with large-scale irrigators under the umbrella of 'agriculture', ignoring the importance of small-scale farming for basic livelihoods. The priority given to 'agriculture' has rapidly fallen since the 1990s.

A best-practice strategic prioritization is formulated in the second edition of the National Water Resource Strategy of South Africa (DWA 2013a). This gives the highest priority to the ecological and basic domestic human needs reserve, followed by water to meet international obligations. The third priority is then given to "the allocation of water for poverty eradication, the improvement of livelihoods of the poor and the marginalized, and uses that will contribute to greater racial and gender equity." Such water uses are given a higher priority than water allocation to the fourth priority: strategic uses, which are primarily for coal-fired electricity generation. The fifth priority is given to permitted water uses for other economic purposes (DWA 2013a: 47). This prioritization should have informed the allocation of new water entitlements, as well as the restrictions imposed on water use during periods of drought. Unfortunately, however, these strategic priorities have not been operationalized into the water use authorization system in South Africa, neither in the prioritization considerations of the National Water Act nor in other tools. Indeed, there is even little awareness of this prioritization among water users and officials.

The only binding legal tool for prioritization is the 'reserve', for which the state commits to ensure the availability of the required volumes. Currently, environmental flows and water for basic domestic uses are reserved in that manner. The option to include basic productive uses in such a reserve should be further explored.

We now turn to the legal tools to implement such prioritization and regulate high-impact users (see section *Permits to Regulate High-impact Users*), while customary investments, water sharing arrangements and small uses are

legally protected and further developed as key to conflict resolution (see section *Recognizing Customary Law*).

Permits to Regulate High-impact Users

New Abstractions by High-impact Users

The 'right' of permit systems is that permits with strict enforced conditions are an effective tool to regulate water use if they are targeted at those uses with the highest impacts. In Kenya, for example, the Water Resources Authority used the permit application process to oblige new high-impact users to develop their own storage instead of abstracting water from streams (Kenyan Water Resources Authority official, pers. comm., May 2018).

Due process in the permitting of new water abstractions by high-impact users also ensures that existing uses are considered and small users are protected. In the five countries studied, the legislation dealing with this process prescribes such consideration. As mentioned above, the Malawian Water Resources Act (2013) (section 41[1]) explicitly refers to traditional communities, and customary rights and practices that need to be considered. Other countries should follow this example and also clarify whether the interpretation of 'existing uses' includes small-scale uses or uses governed by customary water law.

Due process requires the state to take back the burden of proof of such existing customary uses. The legally required public participation process should ensure that those affected can express objections to a proposed infrastructure development and water abstraction. Accessible and understandable information to evaluate the plan should be provided proactively to all users so that they can submit objections and, if need be, appeal. Without such proactive support, the permitting process will be easily abused to suggest a legitimacy that, in reality, serves the interests of high-impact users in the same way as has been happening since the 1920s.

Amending and Converting Existing Water Use Entitlements of High-impact Users

The same due process should hold for the review, amendment or renewal of permits or for the conversion of existing high-impact uses into permitted uses, which can be accompanied by a redistribution of water resources. The legislation in both South Africa (National Water Act 1998 sections 43-48) and Kenya (Water Act 2016, section 47) includes the option of such compulsory permitting, under which all existing and new users in a certain area or water source are obliged to reapply or apply for a permit. In South Africa, the newly elected democratic government saw this as a tool to rapidly convert existing lawful uses under the previous legislation into more equitable water use authorization. It took nearly 20 years for a very resource-intensive, nationwide process of verification and validation of existing uses to be conducted as a first step in preparation for compulsory licensing. However, except for three small pilot projects, later steps have not been applied and there has been no change in the 'lawful' inequities of those pre-1998 uses. Moreover, a blanket approach to compulsory permitting would continue to intrinsically marginalize small- and micro-scale users because of the reasons discussed in this report.

Challenges of Revenue Collection

From a financial perspective, it makes sense only to target higher impact users who generate a revenue that is higher than the costs of billing and collection. Charging fees for the disproportionate use of a scarce national resource is legitimate. Imposing charges on small-scale water users may, however, impose relatively higher costs on these users as in, for example, Uganda, where payment can only be made in Kampala. Water use pricing strategies are flexible and can differentiate among geographical areas, categories of water users or individual water users, and take social equity into account. Well-designed and enforced volume-based pricing discourages wasteful water use, while also generating a net revenue for water resources management.

Revenue collection could also be made more efficient if the water authority continues to provide information and set tariffs, but if the enforcement of revenue collection is shifted to the specialized national revenue collectors, as implemented in Uganda and under discussion in Kenya.

In this way, the targeting of regulatory permits and fees at the high-impact users is justified and feasible. It implicitly protects other users. The next question is how to further recognize, respect and protect the water use of small- and micro-scale users and their customary arrangements without applying the discriminatory tool of water permits.

Recognizing Customary Law

The other side of the coin of decolonizing water law is the *de jure* recognition of the many existing and future medium-, small- and micro-scale users governed by living customary law at equal legal standing as permitting with or without registering. Banks need to be informed of this formal legal status; permits stop being a necessary condition for a loan.

One way of giving such recognition is through the tool of Kenya's Water Act of 2016: an existing water use can be declared as lawful 'by agreement or otherwise' (section 157[d]). Another way to vest formal legitimacy of both existing and new uses is by drastically raising the thresholds for permit exemptions. The tools for this exist in most countries, but have not been used to that end (e.g., for South Africa's General Authorization). Malawi's Water Resources Act (2013) also states that the 'Water Resources Management Authority may exempt [...] a class or persons or works [...] as it may deem fit' (section 45). Similarly, section 19(b) of Uganda's 1995 Water Statute stipulates that a class of persons or works may be exempted on conditions that the minister may deem fit.

The legal standing of such exemptions needs to be declared to be – at least – equal to permits and to follow the prioritization framework. The argument for exemptions should stop being that these uses are 'negligible' so can be ignored in regulation. On the contrary, the small volumes allocated in this way are often vital for fragile livelihoods and align with a

prioritization framework to realize national goals and constitutional rights. Zimbabwe's Primary Uses have such a priority to a large extent.

The threshold should be high enough to end the administrative injustices faced by users whom the state cannot reach and are, therefore, declared as criminal. When water authorities' implementation capacities increase in the future, they can expand the group targeted for registration, revenue payment and due process for new water abstraction.

'Recognition' implies that states accept the burden of proof and collect relevant information about these uses, among others for the above-mentioned due process during new permit applications by high-impact users. Many cost-effective information collection methods exist, such as surveys, remote sensing and information exchange among government departments.

Collective permits may play a role to protect groups against external competitors. However,

delineation of 'the' collective, membership issues and the likely exclusion of some inhabitants sharing the same source may create more problems than it solves. Instead of imposing new forms of organization, living customary norms and conflict resolution arrangements are used as the entry point for officials' roles as mediators, guided by the above-mentioned normative framework to achieve constitutional and other state goals.

Obviously, customary water law is not without problems and may infringe on certain constitutional requirements. Rapid uptake of pumping can dry up rivers that used to flow. Women and more vulnerable men are often excluded. Conflicts arise in water-scarce areas. In case of conflicts, there is likely to be a need for mediation, in which existing customary institutions and conflict resolution arrangements provide indispensable support to state institutions, including local government officials, elected representatives and others.

Conclusions

This report set out to identify lean, feasible and fit-for-purpose regulatory tools for water allocation, information provision and revenue generation that finally recognizes an independent space for customary water investments and sharing arrangements. While global debates primarily focus on the bottom-up need for such independent space, we focused on both bottom-up customary law and top-down statutory permit systems, and on their interface. The focus on this interface generated insights into the ways in which permit systems were introduced to serve the colonial water grab and minority economy, and to marginalize African water law. The study of the interface also highlighted the post-independence forms of even stronger criminalization and marginalization of customary water investors and

the water sharing arrangements of the millions of small-scale users who simply cannot be reached logistically. Their entitlements vis-à-vis the relatively few formal high-impact users further weakened.

At this interface between plural water laws, colonial state formation and claims to water resources went hand in hand. State formation and state-backed claims to natural resources continued to be intertwined, which called for a decolonization that strengthens accountability to the majority of voters and state legitimacy. The proposed hybrid approach fills that void.

In the hybrid approach, statutory water legislation removes the 'wrongs' of colonial water law and reconfigures the 'rights'. The 'wrong' of the past is that permits (or exemptions) are the

primary way for any users to be recognized as a lawful water user. Instead, water allocation should follow a prioritization in line with national goals. The 'right' of permits as tools for regulation should continue as a lean tool without any superior entitlement targeting the limited state capacities at the relatively few large-scale users with the strongest negative impacts on other uses and the environment. This hybrid approach is in line with current practice, which Kenya formalized as a categorization according to impact and the strongest focus on the high-impact users.

The role of states vis-à-vis the many other users profoundly changes from unrealistic logistical burdens and policing of non-permit holders to ending the *de jure* injustices inflicted on these users. Legal tools to that end are available and can be used, for example, by declaring

certain existing water uses as deemed to be lawful or raising the thresholds of exemptions and ensuring equal legal standing.

This reconfiguration finally opens the space to recognize customary law, and welcome and support local investments in water infrastructure in line with the state's prioritization and constitutional requirements. In concrete cases of conflicts, water authorities can mediate and build on existing water sharing and conflict resolution arrangements. Instead of being entangled in concerns of getting a permit or not, the overdue concerns become: what are the ultimate goals that communities and states want to achieve through the regulation of precious water resources, and how best can that be realized? How can customary arrangements contribute to that?

References

- Alden Wily, L.; Dubertret, F.; Veit, P.; Reyta, K.; Tagliarino, N.K. 2017. Water rights on community lands: LandMark's findings from 100 countries. *Land* 6(4): 77. <https://doi.org/10.3390/land6040077>
- Bahri, A.; Sally, H.; McCartney, M.; Namara, R.E.; Awulachew, S.B.; van Koppen, B.; van Rooijen, D. 2011. Integrated watershed management: towards sustainable solutions in Africa. In: *Water for food in a changing world*, eds., Garrido, A.; Ingram, H. London, UK: Routledge. Pp. 50-70. (Contributions from the Rosenberg International Forum on Water Policy).
- Boelens, R. 2008. *The rules of the game and the game of the rules: Normalization and resistance in Andean water control*. PhD thesis. The Netherlands: Wageningen University.
- Bolding, A.; Manzungu, E.; van der Zaag, P. 1996. Farmer-initiated irrigation furrows: Observations from the Eastern Highlands. *The practice of smallholder irrigation: Case studies from Zimbabwe*, eds., Manzungu, E.; van der Zaag, P. Harare, Zimbabwe: University of Zimbabwe Publications. Pp. 191-218.
- Borras, S.M., Jr.; Hall, R.; Scoones, I.; White, B.; Wolford, W. 2011. Towards a better understanding of global land grabbing: An editorial introduction. *The Journal of Peasant Studies* 38(2): 209-216.
- Burchi, S. 2012. A comparative review of contemporary water resources legislation: Trends, developments and an agenda for reform. *Water International* 37(6): 613-627.
- Caponera, D.A. 2007. *Principles of water law and administration: National and international*. Second edition, revised and updated by Marcella Nanni. London: Taylor and Francis. 312p.
- Coward, W.E., Jr. 1986. State and locality in Asian irrigation development: The property factor. In: *Irrigation management in developing countries: Current issues and approaches. Proceedings of an Invited Seminar Series sponsored by the International School for Agricultural and Resource Development (ISARD)*, eds., Nobe, K.C.; Sampath, R.K. Studies in Water and Policy Management, No. 8. Boulder and London: Westview Press. Pp. 491-508.
- Cleaver, F. 1998. Incentives and informal institutions: Gender and the management of water. *Agriculture and Human Values* 15: 347-360.
- Cullis, J.; van Koppen, B. 2008. *Applying the Gini Coefficient to measure the distribution of water use and benefits of water use in South Africa's provinces*. Unpublished paper for Water for Growth and Development. Pretoria, South Africa: Department of Water Affairs; Pretoria, South Africa: International Water Management Institute (IWMI).
- Derman, B.; Hellum, A.; Manzungu, E.; Sithole, P.; Machiridza, R. 2007. Intersections of law, human rights and water management in Zimbabwe: Implications for rural livelihoods. Chapter 15 in: *Community-based water law and water resource management reform in developing countries*, eds., van Koppen, B.; Giordano, M.; Butterworth, J. Wallingford, UK: CABI. Pp. 248-269. (Comprehensive Assessment of Water Management in Agriculture Series 5).
- DWA (Department of Water Affairs). 2013a. *National water resource strategy: Water for an equitable and sustainable future*. June 2013, Second edition. Pretoria, South Africa: Department of Water Affairs (DWA).
- DWA. 2013b. Summary of licences issued to HDI's and breakdown per region and volume. Slide 22 in *Water allocation reform (WAR)*. PowerPoint presentation, Portfolio Committee on Water and Environmental Affairs, April 16, 2013. Pretoria, South Africa: Department of Water Affairs (DWA). Available at http://images.slideplayer.com/25/7823242/slides/slide_22.jpg (accessed on August 28, 2018).
- Franco, J.; Mehta, L.; Veldwisch, G.J. 2013. The global politics of water grabbing. *Third World Quarterly* 34(9): 1651-1675.
- Getches, D. 2005. Defending indigenous water rights with the laws of a dominant culture: The case of the United States. In: *Liquid relations: Contested water rights and legal complexity*, eds., Roth, D.; Boelens, R.; Zwarteveen, M. New Brunswick, New Jersey: Rutgers University Press. 328p.

- Giordano, M.; de Fraiture, C.; Weight, E.; van der Bliet, J. (Eds.) 2012. *Water for wealth and food security: Supporting farmer-driven investments in agricultural water management*. Synthesis report of the AgWater Solutions Project. Colombo, Sri Lanka: International Water Management Institute (IWMI). 50p. Available at http://www.iwmi.cgiar.org/Publications/Other/Reports/PDF/Water_for_wealth_and_food_security.pdf (accessed on August 28, 2018).
- Hellum, A.; Kameri-Mbote, P.; van Koppen, B. (Eds). 2015. *Water is life: Women's human rights in national and local water governance in Southern and Eastern Africa*. Harare: Weaver Press.
- HLPE (High Level Panel of Experts). 2015. *Water for food security and nutrition*. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Security. Rome, Italy: High Level Panel of Experts (HLPE).
- Hodgson, S. 2004. *Land and water – the rights interface*. FAO Legislative Study 84. Rome: Food and Agriculture Organization of the United Nations (FAO).
- Hodgson, S. 2016. *Exploring the concept of water tenure*. Land and Water Discussion Paper 10. Rome: Food and Agriculture Organization of the United Nations (FAO).
- Hoffman, H.J. n.d. *Water rights in Southern Rhodesia - III*. Cape Town.
- Jackson, S. 2018. Indigenous peoples and water justice in a globalizing world. In: *The Oxford handbook of water politics and policy*, eds., Conca, K.; Weinthal, E. New York: Oxford University Press.
- Kiggundu, N. 2017. *Water permit systems, policy reforms and implications for equity in Uganda*. Project Country Report. Water Law Reform to Improve Water Security for Vulnerable People in Africa project. Pretoria: Pegasys Institute; International Water Management Institute (IWMI).
- Lund, C.; Eilenberg, M. 2017. *Rule and rupture: State formation through the production of property and citizenship*. Policy Brief No. 02/2017. Copenhagen Centre for Development Research, Department of Food and Resource Economics, Faculty of Science, University of Copenhagen. 4p.
- Makurira, H.; Viriri, N. 2017. *Water permit systems, policy reforms and implications for equity in Zimbabwe*. Project Country Report. Water Law Reform to Improve Water Security for Vulnerable People in Africa project. Pretoria: Pegasys Institute; International Water Management Institute (IWMI); REACH.
- Malzbender, D.; Goldin, J.; Turton, A.; Earle, A. 2005. *Traditional water governance and South Africa's "national water act" – Tension or cooperation?* Paper presented at the International workshop on 'African Water Laws: Plural Legislative Frameworks for Rural Water Management in Africa', January 26-28, 2005, Johannesburg, South Africa. Pretoria: International Water Management Institute (IWMI); National Resources Institute.
- Mamdani, M. 1996. *Citizen or subject: Contemporary Africa and the legacy of late colonialism*. Princeton: Princeton University Press. 384p.
- Manzungu, E.; Machiridza, R. 2005. *Economic-legal ideology and water management in Zimbabwe: Implications for smallholder agriculture*. Paper presented at the International workshop on 'African Water Laws: Plural Legislative Frameworks for Rural Water Management in Africa', January 26-28, 2005, Johannesburg, South Africa. Pretoria: International Water Management Institute (IWMI); National Resources Institute.
- Mehta, L.; Derman, B.; Manzungu, E. (Eds). 2017. *Flows and practices: The politics of Integrated Water Resources Management in Eastern and Southern Africa*. Harare: Weaver Press.
- Meinzen-Dick, R.; Nkonya, L. 2007. Understanding legal pluralism in water and land rights: Lessons from Africa and Asia. Chapter 2 in: *Community-based water law and water resource management reform in developing countries*, eds., van Koppen, B.; Giordano, M.; Butterworth, J. Wallingford, UK: CABI. Pp. 12-27. (Comprehensive Assessment of Water Management in Agriculture Series 5). Available at http://www.iwmi.cgiar.org/Publications/CABI_Publications/CA_CABI_Series/Community_Law/protected/Ch%2002.pdf (accessed on August 28, 2018).
- Mulwafu, W.; Mwamsamali, O. 2017. *Water permit systems, policy reforms and implications for equity in Malawi*. Project Country Report. Water Law Reform to Improve Water Security for Vulnerable People in Africa project. Pretoria: Pegasys Institute; International Water Management Institute (IWMI); REACH.

- Newbury, C. 2003. *Patrons, clients, and empire: Chieftaincy and over-rule in Asia, Africa, and the Pacific*. Oxford: Oxford University Press.
- Nilsson, D. 2011. *Pipes, progress, and poverty: Social and technological change in urban water provision in Kenya and Uganda, 1895-2010*. Doctoral thesis in History of Technology. Stockholm, Sweden: Department of Philosophy and the History of Technology, School of Architecture and the Built Environment, Royal Institute of Technology.
- Nilsson, D.; Nyanchaga, E. 2009. East African water regimes: The case of Kenya. Chapter 7 in: *The evolution of the law and politics of water*, eds., Dellapenna, J.W.; Gupta, J. Springer Verlag. Pp. 105-120.
- Phimister, I. 1988. *An economic and social history of Zimbabwe, 1898-1948: Capital accumulation and class struggle*. London and New York: Longman. 336p.
- Ramazotti, M. 1996. *Readings in African customary water law*. FAO Legislative Study 58. Rome: Development Law Service, Food and Agriculture Organization of the United Nations (FAO).
- Ranger, T. 1985. *Peasant consciousness and Guerilla War in Zimbabwe: A comparative study*. Oxford, UK: James Currey.
- RSA (Republic of South Africa). 1996. *Constitution of the Republic of South Africa, no. 108 of 1996*. Statutes of the Republic of South Africa - Constitutional Law. Cape Town: Office of the President.
- RSA (Republic of South Africa). 1998. *National water act, 1998*. Government Gazette, Volume 398, August 26, 1998. Cape Town: Office of the President.
- Sarpong, G. 2004. *Going down the drain? Customary water law and legislative onslaught in Ghana*. FAO commissioned paper under a joint FAO/IUCN research project investigating the interface of customary and statutory water rights. Rome: Food and Agriculture Organization of the United Nations (FAO).
- Shurie, M.M.; Mwaniki, B.; Kameri-Mbote, P. 2017. *Water permit systems, policy reforms and implications for equity in Kenya*. Project Country Report. Water Law Reform to Improve Water Security for Vulnerable People in Africa project. Pretoria: Pegasys Institute; International Water Management Institute (IWMI); REACH.
- UN (United Nations). 2002. *General comment no. 15: The right to water (arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights)*. United Nations document E/C.12/2002/11. Twenty-ninth session, November 11-29, 2002, Geneva. New York, USA: United Nations Economic and Social Council. Available at http://www2.ohchr.org/english/issues/water/docs/CESCR_GC_15.pdf (accessed on August 29, 2018).
- van Eeden, A.; Mehta, L.; van Koppen, B. 2016. Whose waters? Large-scale agricultural development and water grabbing in the Wami-Ruvu River Basin, Tanzania. *Water Alternatives* 9(3): 608-626.
- van Koppen, B. 2017. Water allocation, customary practice and the right to water: Rethinking the regulatory model. Chapter 2 in: *The human right to water: Theory, practice and prospects*, eds., Langford, M.; Russell, A.F.S. Cambridge, UK: Cambridge University Press. Pp. 55-56.
- van Koppen, B.; Schreiner, B. 2014a. Priority general authorisations in rights-based water use authorisation in South Africa. *Water Policy* 16(S2): 59-77.
- van Koppen, B.; Schreiner, B. 2014b. Moving beyond integrated water resource management: Developmental water management in South Africa. *International Journal of Water Resources Development* 30(3): 543-558.
- van Koppen, B.; van der Zaag, P.; Manzungu, E.; Tapela, B. 2014. Roman water law in rural Africa: The unfinished business of colonial dispossession. *Water International* 39(1): 49-62.
- van Koppen, B.; Nhamo, L.; Cai, X.; Gabriel, M.J.; Sekgala, M.; Shikwambana, S.; Tshikolomo, K.; Nevhutanda, S.; Matlala, B.; Manyama, D. 2017a. *Smallholder irrigation schemes in the Limpopo Province, South Africa*. Colombo, Sri Lanka: International Water Management Institute (IWMI). 36p. (IWMI Working Paper 174). Available at http://www.iwmi.cgiar.org/Publications/Working_Papers/working/wor174.pdf (accessed on August 24, 2018).

- van Koppen, B.; Hellum, A.; Mehta, L.; Derman, B.; Schreiner, B. 2017b. Rights-based freshwater governance for the twenty-first century: Beyond an exclusionary focus on domestic water uses. Chapter 7 in: *Freshwater governance for the 21st century*, ed., Karar, E. Global Issues in Water Policy, Volume 6. Springer Verlag. Pp. 129-143.
- Vera Delgado, J.R.; Zwarteveen, M. 2017. Queering engineers? Using history to re-think the associations between masculinity and irrigation engineering in Peru. *Engineering Studies* 9(2): 140-160.
- Woodhouse, P.; Veldwisch, G.J.; Venot, J-P.; Brockington, D.; Komakech, H.; Manjichi, A. 2017. African farmer-led irrigation development: Re-framing agricultural policy and investment? *The Journal of Peasant Studies* 44(1): 213-233.

Annex 1. Water Legislation Examined for this Report.

Kenya	<p>1903 Water Rules</p> <p>1929 Water Ordinance. Ordinance No. 35 of 1929 to make provision for the employment and conservation of waters, and to regulate water supply, irrigation and drainage. Ordinances enacted during the year 1929. Colony and protectorate of Kenya. Nairobi: Printed by the Government Printer 1930</p> <p>1952 The Water Act, Chapter 372</p> <p>1962 The Water Act, Chapter 372 Revision (1963 Independence)</p> <p>1972 The Water Act, Chapter 372 Revised Edition 1972 (1962)</p> <p>2002 Water Act, Chapter 372; revised in 2012</p> <p>2016 The Water Act</p>
Nyasaland/ Malawi	<p>Natural Resources (Amendment) Ordinance 22 of 1952 (1964 Independence)</p> <p>1969 Water Resources Act, Chapter 72:03</p> <p>2013 Act No. 2 Water Resources Act (not yet operationalized)</p>
South Africa	<p>1912 Irrigation and Conservation of Water Act</p> <p>1913 and 1936 Territorial Segregation in Land Acts</p> <p>1956 Water Act (No. 54 of 1956) (1960 Republic of South Africa created) (1994: Full democracy)</p> <p>1998 National Water Act (Act 36 of 1998)</p>
Uganda	<p>1907 Rivers Act, Chapter 357</p> <p>Water included in land legislation (1962 Independence)</p> <p>1964 The Water Works Act, Chapter 137</p> <p>1969: Public Land Act: Water on or under land reserved to government</p> <p>1995 Water Statute No. 9, Statutes Supplement No.7</p> <p>1997 The Water Act Cap. 152</p> <p>2998 The Water Resources Regulations No. 33/1998</p>
Southern Rhodesia/ Zimbabwe	<p>1912 Union Irrigation Act</p> <p>1927 Act No. 22. Water Act to consolidate and amend the law in respect of the ownership, control and use of water</p> <p>1930 Territorial Segregation in Land Apportionment Act</p> <p>1947 Water Amendment Act</p> <p>1976 Water Act, Chapter 20:22</p> <p>1977-1996 Revised editions (1980 Independence)</p> <p>1998 Water Acts 31/1998, 22/2001, 13/2002, 14/2002</p>

Annex 2. Trends in Exempted Uses over Time.

This Annex lists the uses and users that are exempt from the obligation to apply for a permit and their prioritization (if any) over time.

	First colonial water laws	Trends over time	Legislation 2017
Kenya	<p>1929 Water Ordinance</p> <p>Domestic uses are defined as 'household and sanitary purposes, the watering and dipping of stock and the essential requirements of such farming operations which are not of an industrial nature'. Provided 'such abstraction or use is made without the employment of works' (section 7[a]). Hand utensils are not defined as 'works'.</p> <p>The Water Board 'may reserve' these quantities for riparian land (section 8).</p>	<p>Cap. 372 in 1972</p> <p>Domestic purposes defined as 'household and sanitary purposes, the watering and dipping of stock (section 35) (provided without the employment of works) (section 38). Hand utensils were not defined as 'works'. The use of water for domestic uses shall take precedence over other purposes and the water apportionment Board 'may reserve' such part of body of water' (section 82).</p> <p>Subsidiary legislation form no. W.A.B. 13 sets allowable quantities: 50 gallons per day per head for non-Africans (Europeans and Asians), and 10 gallons per day per head for Africans.</p> <p>2002 Water Act: domestic purposes, provided without the employment of works (but a permit may be required).</p>	<p>2016 Water Act</p> <p>Domestic purposes (which is not further defined) without the employment of works for persons with lawful access to the source, and for springs within land boundaries, or small storage (but state may require a permit or otherwise regulate) (section 37).</p> <p>Domestic uses take precedence over other uses. The authority may reserve such quantities as, in its opinion, is required (section 43[1]).</p> <p>The reserve includes 'basic human needs and aquatic ecosystems'; it is not specified whether basic human needs only refer to domestic uses or also small-scale productive uses that contribute to constitutional basic rights to food and income.</p>
Malawi	No data	<p>1969 Water Resources Act</p> <p>Right to take public water without 'works' for domestic purposes (section 6).</p> <p>Domestic purposes defined as: 'water for household and sanitary purposes and for watering and dipping of stock'.</p> <p>Definition of 'works' excludes hand dug well. The Board may direct otherwise and limit the number of stock.</p>	<p>2013 Water Resources Act (still being operationalized)</p> <p>Domestic uses are defined as: 'water for household and sanitary purposes and for watering and dipping of stock (less than 30 livestock units); irrigating a subsistence garden (defined as less than 0.5 ha, at homestead, and primarily for own consumption); and watering a subsistence fish pond'.</p> <p>Definition of 'works' excludes: hand-dug borehole; borehole less than 10 m; and rainwater harvested on own or communal land.</p>

	First colonial water laws	Trends over time	Legislation 2017
		Normal quantities per day for household use: low density 300 gallons; medium density 50 gallons; high density 10 gallons (schedule A) (note: low density commonly referred to settlers; high density to Africans).	The Water Resources Management Authority may exempt [...] a class or persons or works [...] as it may deem fit (section 45).
South Africa	1912 Irrigation Act (no data).	1956 Water Act The minister may exempt a person or category of persons.	1998 National Water Act Schedule One: Reasonable domestic use: (ii) small gardening not for commercial purposes; and (iii) watering of animals (excluding feedlots); roof water harvesting; and firefighting. General Authorizations for a resource or category of people (section 39). The minister may change. Reserve: for 'basic human needs', which are defined in regulations as 25 liters/person/day.
Uganda	No water act.	No water act.	1995 Water Act Cap. 152 Section 7 General rights to use water (but no authorization to construct any works) for: <ul style="list-style-type: none"> • Domestic uses, firefighting or irrigating a subsistence garden (section 7b). • Water under the land occupied or residential (with approval from the authority). Domestic uses defined as water for human consumption, washing and cooking by persons ordinarily resident on the land where the use occurs; watering not more than 30 livestock; irrigating a subsistence garden (defined as not exceeding 0.5 ha, near residency and predominantly consumed, not sold or bartered); and watering a subsistence fish pond. Works is defined in regulations section 10: motorized or able to convey/impound 400 m ³ or more per 24 hours. Minister may set a range of conditions on any water use. Water Policy 1999. Priorities: (i) Domestic demands, (ii) other uses including water for production

	First colonial water laws	Trends over time	Legislation 2017
			(agriculture, industry, hydropower) to be based on economic, social and environmental values of the water (most beneficial use). For watercourses, provision of a minimum flow to maintain water quality and aquatic ecosystems.
Zimbabwe	<p>Order in Council, 1898 and 1927 Water Acts, and 1947 amendment:</p> <p>Priority for primary water uses (for human use, gardening in and around homestead, and farm livestock at 50 gallons [~228 liters] per person per day) over secondary and tertiary uses.</p>	<p>1976 (1996 revised edition) Water Act, Chapter 20: 22</p> <p>Primary water uses by <i>the riparian</i> landowner, lessee or occupier.</p> <p>Primary water uses are defined as: reasonable uses for human use, homestead garden, cleaning, animal life (no fish or feedlots using 12 m³ per day or more), private brick making, dipping. Set at 50 gallons (228 liters) per person per day. However, the minister may limit quantities used for primary purposes (section 35).</p> <p>When constructing works for primary uses, the riparian owner needs to notify those affected and resolve conflicts through the Water Court (section 34.2).</p> <p>Casual uses of public water (cooking, drinking or washing; or use in a vehicle or for watering stock) (section 33).</p> <p>Landowner or occupier can abstract groundwater of that land (section 63), but needs to report if deeper than 15 meters (section 65) or otherwise as required by minister (section 66).</p>	<p>1998 Water Act, Chapter 20:24, amended in 2002:</p> <p>Primary water uses by everyone (section 32) (Primary water uses are defined as: reasonable uses for basic domestic human needs in/around residence, animal life [no fish or feedlots using 10 m³ per day or more], private brick-making, dipping).</p> <p>However, the Catchment Council may limit quantities used or the number of livestock for primary purposes (section 33).</p> <p>When constructing storage of less than 5,000 m³ for primary uses, the user needs to notify those affected and the Catchment Council, and resolve conflicts through the Catchment Council (section 32.2).</p> <p>For sinking a borehole for primary purposes, a written authority needs to be obtained from the Catchment Council.</p> <p>No other permits shall deprive primary uses.</p>

IWMI Research Reports

- 173 *A Hybrid Approach to Decolonize Formal Water Law in Africa*. Barbara van Koppen and Barbara Schreiner. 2018.
- 172 *Business Model Scenarios and Suitability: Smallholder Solar Pump-based Irrigation in Ethiopia*. Miriam Otoo, Nicole Lefore, Petra Schmitter, Jennie Barron and Gebrehaweria Gebregziabher. 2018.
- 171 *Joint Ventures in the Flag Boshielo Irrigation Scheme, South Africa: A History of Smallholders, States and Business*. Barbara van Koppen, Barbara Nompumelelo Tapela and Everisto Mapedza. 2018.
- 170 *Mapping Multiple Climate-related Hazards in South Asia*. Giriraj Amarnath, Niranga Alahacoon, Vladimir Smakhtin and Pramod Aggarwal. 2017.
- 169 *Beyond "More Crop per Drop": Evolving Thinking on Agricultural Water Productivity*. Meredith Giordano, Hugh Turrall, Susanne M. Scheierling, David O. Tréguer and Peter G. McCormick. 2017.
- 168 *Global Environmental Flow Information for the Sustainable Development Goals*. Aditya Sood, Vladimir Smakhtin, Nishadi Eriyagama, Karen G. Villholth, Nirosha Liyanage, Yoshihide Wada, Girma Ebrahim and Chris Dickens. 2017.
- 167 *Reviving the Ganges Water Machine: Potential and Challenges to Meet Increasing Water Demand in the Ganges River Basin*. Upali A. Amarasinghe, Lal Muthuwatta, Vladimir Smakhtin, Lagudu Surinaidu, Rajmohan Natarajan, Pennan Chinnasamy, Krishna Reddy Kakumanu, Sanmugam A. Prathapar, Sharad K. Jain, Narayan C. Ghosh, Surjeet Singh, Anupma Sharma, Sanjay K. Jain, Sudhir Kumar and Manmohan K. Goel. 2016.
- 166 *Evaluating the Flow Regulating Effects of Ecosystems in the Mekong and Volta River Basins*. Guillaume Lacombe and Matthew McCartney. 2016.
- 165 *Controlling Floods and Droughts through Underground Storage: From Concept to Pilot Implementation in the Ganges River Basin*. Paul Pavelic, Brindha Karthikeyan, Giriraj Amarnath, Nishadi Eriyagama, Lal Muthuwatta, Vladimir Smakhtin, Prasun K. Gangopadhyay, Ravinder P. S. Malik, Atmaram Mishra, Bharat R. Sharma, Munir A. Hanjra, Ratna V. Reddy, Vinay Kumar Mishra, Chhedi Lal Verma and Laxmi Kant. 2015.

Electronic copies of IWMI's publications are available for free.

Visit

www.iwmi.org/publications/

Postal Address

P O Box 2075
Colombo
Sri Lanka

Location

127 Sunil Mawatha
Pelawatta
Battaramulla
Sri Lanka

Telephone

+94-11-2880000

Fax

+94-11-2786854

E-mail

iwmi@cgiar.org

Website

www.iwmi.org



IWMI is a
CGIAR
Research
Center
and leads the:



RESEARCH
PROGRAM ON
Water, Land and
Ecosystems

ISSN: 1026-0862
ISBN: 978-92-9090-870-8