

Roman water law in rural Africa: dispossession, discrimination and weakening state regulation?

B. van Koppen^{*}, P. van der Zaag^a, E. Manzungu^b, B. Tapela^c, and E. Mapedza^{d1}

ABSTRACT

The recent water law reforms in Africa, Latin America and elsewhere strengthen permit systems. This water rights regime is rooted in Roman water law. The European colonial powers introduced this law in their colonies, especially in Latin America and later also in Sub-Saharan Africa. By declaring most waters as being public waters, they vested ownership of water resources in their overseas kings. This dispossessed indigenous peoples from their prior claims to water, while the new formal water rights (or permits) were reserved for colonial allies. At independence, ownership of water resources shifted to the new governments but the nature of the water laws, including the formal cancellation of indigenous water rights regimes as one of the plural water rights regimes, remained uncontested. This colonial legacy remained equally hidden in the recent reforms strengthening permit system. Based on research on the new permit systems in a context of legal pluralism in Tanzania, Mexico, South Africa, Ghana, Mozambique and elsewhere, this paper addresses two dilemmas. The first is: how can the dispossession and discrimination be reverted by recognizing and even encouraging informal water self-supply since time immemorial to meet basic livelihood needs by millions of small-scale water users? The second dilemma, which prevails in Sub-Saharan Africa, but less in Latin America, is: can permit systems become effective regulatory tools to combat water over-use and pollution, collect revenue, and, where historical justice warrants, to re-allocate water from the haves to the have-nots, as South Africa's water law aims? The paper provides evidence and best practices on, first, how the state can recognize legal pluralism and informal water rights regimes, and, second, how state regulation can only become effective through lean and targeted measures, so *without* nation-wide permits.

Key words: Africa, informal, indigenous, legal pluralism, regulation, water law

1. INTRODUCTION

1.1 Background and research questions

In the global wave of water law reform since the 1960s and especially since the 1990s, many governments revised their statutory water laws. This occurred in high-income countries, such as the United Kingdom in 1963 and in France in 1964, and in middle-

¹ *International Water Management Institute – corresponding author b.vankoppen@cgiar.org

^aUnesco-IHE, Delft Netherlands, ^b University of Zimbabwe, Harare, ^c African Centre for Water Research, South Africa, ^dInternational Water Management Institute

income countries in Latin America, e.g., Chile (Water Code of 1981) and Mexico (National Waters Law of 1992). Water laws were also revised in Sub-Saharan Africa, including Mozambique (Ley de Agua 1991, followed by the Licence and Concession Regulations Decree n° 43/2007), Uganda (Water Statute 1995), Ghana (Water Resources Commission Act 1996), Tanzania (1997 and 2002 Amendments to Water Ordinance (Control and Regulation) Act No. 42 of 1974; a new Act was promulgated in 2010), Zimbabwe (Water Act No 31/1998), South Africa (National Water Act 1998), Kenya (The Water Act 2002), Burkina Faso (Loi d'orientation relative a la gestion de l'eau 2001), and Swaziland (Water Act 2002). Other countries like Zambia are in the process of redrafting.

All these new laws introduced or strengthened one particular legal system: Roman water law, which, in its contemporary version, is a nation-wide blanket permit system. In this legal system, most, if not all the nation's waters are declared as public waters under the ownership or trusteeship of the state. Citizens can only obtain lawful access to these public waters by applying for administrative permits (or water rights, licenses, or concessions, - all refer to essentially the same legal tool; all are called 'permits' in this paper), or by being exempted from such obligation. This paper explores the two sides of the coin of permit systems: both the entitlement dimensions which determine the formal lawfulness of water use, and the obligation dimensions of permits as vehicles for the state to impose regulatory measures.

The focus of this paper is on the implications of the law reforms for the millions of informal rural and peri-urban small-scale water users in Sub-Saharan Africa. They constitute the large majority of water users who improve their access to water by taking water directly from surface or groundwater sources for fragile agriculture-based livelihoods. Their access to water for domestic and productive uses is typically governed by informal arrangements since time immemorial (or customary or indigenous – these terms are used interchangeably here). Water used for domestic purposes, subsistence agriculture, and a few livestock often meet basic human rights to water, health, food and income and are critical to improve poor smallholders' livelihoods and escape poverty.

The one side of the coin discussed are the entitlement dimensions in the sense of formal, state-backed claims to water that users can make vis-à-vis fellow water users and the state. The issue here is whether and how the imposition of one particular legal system formally dispossesses water users who gain access to water under one of the many other plural water rights systems, from their existing claims. In only few countries, like Chile and South Africa, the lawfulness of so-called 'existing uses' that were lawful under former water laws, is recognized as lawful under the new act as well (Bauer 2004; RSA 1998). In all other countries, users under such other legal systems are obliged to convert or 'regularize' their existing lawful uses into permits. It is often assumed that there is no dispossession because such conversion is well possible. This paper explores whether such conversion is possible at all at any short term, or whether it is mainly leading to even more legal pluralism, paradoxically in the name of vesting 'neat and orderly' water rights.

Even if one assumes that conversion to permit systems is possible, there is still the question what the implications of such permit systems are for small-scale users' entitlements. This question is answered for two categories of users. One category of small-scale users concerns those who are obliged to apply for a permit. The other category are micro-scale uses below a certain threshold. Each law stipulates such threshold in slightly different ways, e.g. of 0.25 ha of irrigated land or the use of water that is lifted with manual devices only. Those micro-uses, or '*de minimis* uses', are exempted from the obligation to apply for a permit (Hodgson 2004). For this category of micro-users, the majority of whom are the poor and poorest, the issue is: what sort of entitlement is it, if one is exempted. Indeed, can any law that, by design, allocates different sorts of first-class and rest-category entitlements to different sorts of citizens be non-discriminatory?

The other side of the coin of Roman water law concerns regulatory obligations. For waters declared as private waters, the owner can do as (usually:) he wants. However, for the other category of waters declared as being public, permits are required with certain obligations attached to ensure water regulation in a valid common interest. Today as well, the state can attach conditions to a permit in its function as regulator, such as registration, taxation, certain uses and certain sites of use, pollution restriction, etceteras. Regulation in general and taxation in particular were important drivers behind the law reform in Sub-Saharan Africa. This paper also explores the role of permits for regulation.

This combination of entitlements and regulation vis-à-vis public waters has varied in history and across the world, and may be confusing, so some further explanation on the nature and purpose of Roman water law is given here from a historical perspective. In 500 BC, a small group of farmers around Rome introduced the division between public and private waters to ensure that public waters used by many were governed in a collective interest, for example, for fishing from public rivers. So 'the collective' was this small tribe. However, thousand years later, 'the collective' had become the Roman Emperor on his own. Although Roman water law remained being portrayed as a regulatory tool in the public interest, the entitlement dimensions were at least as important: by declaring waters, including those of conquered tribes, as being public in need of regulation, the Emperor appropriated those waters across his empire in the same go (Caponera 1992). As elaborated below, the colonial powers who introduced Roman water law especially in Latin America and Sub-Saharan Africa had the same primary goal of dispossession.

Some of the recent reforms, such as the widely documented water reforms in Chile and Australia, advocated for the *removal* of obligations, so that permits would entail more user entitlements and less state involvement. The Chilean Water Code of 1981 in particular stripped all obligations from permits, which had been introduced by the Spanish colonizers four centuries earlier. There was not even an obligation to use waters. Registration was just encouraged but not obligatory. The resulting type of entitlements to use public waters equaled private property rights for all practical purposes. As widely criticized, this caused speculation and hoarding in applying for the

still free access to the nation's remaining unused water resources, typically by the vested large-scale users, such as energy companies. For these new title holders, the freely obtained water became a commodity for sale to any next newcomer. It was only in 2005 that the newly elected democratic government reinstated the obligation that requested water permits should at least be put to use (Bauer 2004; GWP 2006).

In Australia, permit systems had evolved since more than a century among today's few hundreds of thousands well organized water companies and large-scale users (dispossessing the aboriginals for once and forever). Loosening up on the obligatory nature of these already well-developed permits, the reform just added the tradability of permits. Innovations in water trade did take place although at a smaller scale than often assumed. In this arid country with growing physical water scarcity, water trade among users themselves helped the state to solve the zero-sum game of accommodating the water needs of newcomers, especially the environment (Haisman 2005).

In contrast, in Sub-Saharan Africa, the regulatory role of permits through the obligations attached to permits were an important driver of the reform, certainly in the discourses of the country's state water managers and the international donors, such as the World Bank, FAO and some civil-law European countries, who financed the revision of the legal texts by national and international lawyers (Hodgson 2004; Van Koppen et al 2004; Burchi 2005). The message was that permits were a good, if not the best, neat and orderly water law to effectively impose more regulatory obligations. So permits were strengthened, revised and promoted as the vehicle par excellence for effective state intervention for very diverse goals simultaneously.

Four regulatory functions that permits were supposed to fulfill are most commonly mentioned in the literature. First, water use and users should be registered, either on its own or as an intrinsic first step of obtaining permits. Obviously, such knowledge of water use and users is vital for any management. Second, and the most debated function of permits, is taxation for using the nation's water resources – even without benefiting from any public water infrastructure service. In many countries across the continent, 'permits' are used almost synonymously with 'taxation'. These revenues would fund the state organs or the newly envisaged catchment management bodies responsible for water resource management. Third, permits would allow tying waste discharge charges to pollution as a way to both implement the 'polluter pays principle' and to ensure further income for the water resource management institutions.

The fourth expected regulatory merit of strengthened permits combines the entitlement and obligatory dimensions from the state's angle: permits are expected to better allow the state to intervene in citizens' water entitlements. In particular, by rejecting applications and putting certain restrictions and caps on water use at defined sites, permits would allow state-steered water allocation. Moreover, in Southern Africa, state intervention would also allow historical justice. The Water Act of 1998 in Zimbabwe, for example, curtailed the gross freedoms that colonial settlers had given to their own permits, such as rights in perpetuity. This was expected to better regulate these vested users for more equity (Manzungu and Machiridza 2005). South Africa also aims at re-

allocation of water from the haves to the have-nots to redress inequities from the past (RSA 1998; RSA 2008). The Act recognizes its plural water laws inherited from the past and introduces permits only for *new* water uses. It explicitly stipulates localized procedures to convert its various laws into one single permit system (through 'compulsory licensing'); redressing inequities from the past is an explicit goal of such procedures.

This paper acknowledges the need for these regulatory functions in Sub-Saharan Africa without going into depth on the functions per se. It focuses in particular on the needs of water managers at national or catchment level to be informed about the resource and its users, to collect revenue, and to be able to intervene in water allocation. The question explored below is whether the high expectations that permits are effective vehicles to implement these regulatory functions, hold in practice.

1.2 Structure of the paper

The structure of this paper follows these questions: first, whether the newly promulgated or strengthened permit systems dispossess and discriminate both small-scale and micro-scale water users, and, if so, how that can be reverted (section two), and, second, whether permit systems are effective vehicles for state regulation, and, if not, how current permit systems can be adjusted to become more effective regulatory tools (section three). If permits dispossess and discriminate the majority of Sub-Saharan Africa's citizens and fail as blanket regulatory tools as well, as this paper will find, solutions are identified and recommended that address these flaws, as summarized in section four.

2. DISPOSSESSION AND DISCRIMINATION OF SMALL-SCALE USERS BY DESIGN?

2.1 Finishing the unfinished business of colonial dispossession?

There is a simple, obvious answer to the question: what happened to the entitlements of small-scale water users governed by informal water rights arrangements, when Sub-Saharan Africa's water reforms revised and enforced existing but dormant permit systems, or newly introduced permit systems as single valid legal regime? Imposing one legal system as the only lawful one among existing plural legal systems renders those other regimes unlawful. That was the aim of the Roman conquerors: by declaring waters of their conquered tribes as being public waters, the Roman rulers declared themselves as owner (or custodian, or – more recently – the public trustee – terminologies which are used interchangeably here) of those waters, whatever prior uses (Van Koppen 2007).

This is also why and how Roman water law was imposed on Latin America and Sub-Saharan Africa. Europe's colonial powers revived this appropriation of Roman water law in their colonies – but not in Europe itself. Already before 1500 AD, through the Papal Bull of 1493, the Catholic Pope encouraged Spanish colonizers to expropriate water resources in this way, when he

'gave the Catholic kings all newly discovered lands, including waters. Water use became the object of special kings' permits granted by the Spanish government authorities for certain purposes, such as domestic drinking needs and irrigation.' The permits could be revoked and violations of requirements of the permits were punishable by a fine (Caponera 1992).

In Mexico, the Spanish conquerors introduced permit systems in 1512. Ownership of water resources was vested in the Spanish king and a royal grant was required to use water. However, in Mexico the factual 'granting' of concessions remained dormant until 1992. By then, only approximately two thousand concessions had been granted. The Mexican water law reform of 1992 restored this colonial legacy nation-wide (Garduno 2001).

Similar processes occurred in Sub-Saharan Africa. For five centuries, Portuguese colonies like Mozambique were considered a province, subject to Portugal's water law. In 1946, permits (or exemptions) were formalized as the only way to obtain lawful access to water (Manjate 2010). In the 19th and 20th century, other colonial powers introduced water legislation, but by then differentiating between continental civil-law countries with a strong Roman tradition, and especially British common-law countries with a riparian doctrine. The double standards in framing permit systems in Europe versus its colonies are revealing. For example, in the early 1800s, the upcoming French bourgeoisie had classified most waters in France as private waters, avoiding state intervention. Only few waters were public waters, in particular waters that were 'navigable or floatable' and, therefore, required a collective authority to enable navigation. However, in their colonies, the French reasoned differently:

[D]ue to climatic circumstances, i.e., of the fact that most African streams are seasonal and therefore non-navigable during certain periods of the year with the consequence that very little is left to the public domain, the distinction between navigable and non-navigable waters disappeared and, generally, all waters were placed in the public domain. Under this regime, every use of public water is subject to the obtention of an administrative authorization, permit or concession (Caponera 1992).

In some colonies, such as Zimbabwe and Tanzania, even the common-law British conquerors adopted permit systems (Manzungu et al 2007). But elsewhere, as in South Africa and Ghana, they vested the riparian doctrine and a large number of legal enactments concerning specific water utilizations (Caponera 1992).

At independence, the new governments in both Latin America and Sub-Saharan Africa simply shifted the custodianship of water resources to the new independent states, without much further debate. As in Mexico, permits in Sub-Saharan Africa also remained largely dormant, certainly in rural areas. With abundant water resources that hardly required any regulation, the young states were occupied with more urgent agendas of the infrastructure development to harness the abundant, but underdeveloped water resources (Van Koppen et al 2004).

This changed, again as in Mexico, when the international pressure for water law reform of the 1990s revived this colonial legacy and its enforcement in Sub-Saharan Africa, and this time in common-law countries as well. Without any further debate on the appropriateness of the colonial legacy, the legal reforms in all civil-law African countries promoted the awakening of the dormant permit systems and now also their enforcement. Instead of colonial rulers, the own state declared all other plural laws as unlawful, dispossessing especially small-scale water uses in rural areas, where the colonial legislation had hardly enforced as yet. It is true that the 1998 water reform in Zimbabwe served the purpose of historical justice by weakening the strong, almost private water rights in perpetuity of the large-scale white water users (Manzungu et al 2007). Nevertheless, the imposition of permits in communal lands with customary water rights did imply the dispossession of the majority of small-scale users' existing water uses and governance.

The global wave towards permit systems even forced this single civil-law system upon common-law countries, such as Ghana. Expectedly, with hardly any tradition in state ownership and permits and relatively strong legal powers of traditional chieftaincies, the declaration of state ownership and permits and dispossession of existing lawful water uses was contested. Referring to the Ghanaian Water Resources Commission Act of 1996, water lawyer Sarpong comments:

By a stroke of the legislative pen and policy intervention, proprietary and managerial rights which had been held from time immemorial by families, stools, and communities have been taken away from a people some of who probably had no prior knowledge of the matter. (...) The issue is whether the Water Resources Commission Act can unilaterally hive off water from land and provide a separate institutional and legislative framework to address its use. (...). This is an issue that deserves to be examined having regard to the massive nature of the assault of the legislation on customary proprietary water rights... If the law on appropriation of land by the state is to be used as a guide on the matter, then it may be surmised that the Water Resources Commission, in spite of its far sweeping powers with regard to water appropriation, would have to yield to the constitutional requirement of providing prompt, adequate, and effective compensation in accordance with Article 20 of the Constitution for the compulsory acquisition of customary water rights as obtains in the case of compulsory land acquisition by the state (Sarpong undated).

Recognizing the importance of traditional leaders and indigenous arrangements, the Water Resources Commission is seeking a middle-way now: '[First, the] WRC has taken a position of not directly interfering but to monitor and develop comprehensive information on the current customary water rights practices with a view to advise on policy direction and take decisions on a case-by-case basis, where need be, regarding the management of the water resource. Secondly, WRC recognises and gives priority to the role of traditional authorities as one key contributory factor towards realizing the purpose of the State system – involving them in public hearings, extensive consultation

and dialogue, and having a position/representation from the national to the basin level on institutional management and coordinating bodies to influence water rights decisions' (Ampomah and Adjei 2009).

The South African experience also illustrates the nature of vesting public trusteeship with related permits in a context of riparian rights and other plural water rights regimes. Before 1998, there was a plural patchwork of riparian rights, private rights to groundwater, forestry permits, scheduled rights in irrigation systems, state control of Government Water Control Areas, and customary rights in former homelands. In 1998, the new democratically elected South African government opted to change this patchwork into public trusteeship over all water resources with related permits. Not surprisingly, though, the vested white powers in South Africa negotiated that existing water entitlements that were lawful under any earlier act (including the gross inequities in water use) were included as a sort of property right under the Constitution. In the National Water Act of 1998, such prior lawful water uses continued to be recognized as lawful. In that Act, only *new* water uses have to be permitted – considerably adding to the legal pluralism of the country's already assorted plural laws (RSA, 1998).

Aware of the complexities and risks of converting any one legal system into another legal system, the 1998 Act enables fully controlled, site-specific projects of 'compulsory licensing', in which all existing lawful uses are converted into a single permit system in that specific area. In principle, under such compulsory licensing project, water can be re-allocated from the haves to the have-nots, including 'the' environment. Under certain conditions such distributive re-allocation is even without compensation. During the formulation process that led up to the promulgation of the 1998, nobody seemed to have realized an implication of this protection of existing lawful water uses: that is that the water claims vested by Blacks in the former customary-ruled homelands before 1998 are also recognized as being lawful (Asmal 2010 personal communication). Thus, as an unintended spin-off, South Africa's customary water rights of largely small-scale users in former homelands are recognized as being lawful, unlike the many other countries, in which the formal law cancels informal water rights.

A common objection against the implication that small-scale users are all dispossessed from their claims to water is that they are not dispossessed because they can, and even should, 'regularize' and register or apply for a permit to render their use lawful again. However, this argument is underpinned by two assumptions, which are explored in the next section. The first assumption is that conversion is possible at all (2.2). The second assumption, discussed in 2.3, is that, even if one assumes a smooth, full-fledged conversion of plural water laws into one uniform system of permits, permit systems as entitlement systems are intrinsically equitable and non-discriminatory for small-scale users. Both assumptions are flawed.

2.2 Is conversion possible?

As well known for other natural resources, conversion of one legal system, in particular customary law, into another is highly problematic. Comparing with land tenure reform in Sub-Saharan Africa, even half a century of massive and costly efforts of centralized

titling has left few successes. Through trial and error, the recognition has grown that one simply has to start with recognizing the reality of existing customary land rights, and is only very gradually able to move towards individual titling, where and as needed (McAuslan 2005). Water resources are definitely more difficult to know, let alone register than land resources. Water is a fugitive resource; quantities vary each day, certainly in rural areas where infrastructure is largely lacking and where water availability highly depends upon rainfall. Moreover, the bundle of rights is wide and complex and local- and season-specific. Entitlement issues concern both the right to dispose of too much water under flooding and the right to access water when there is really competition, i.e. during the dry season or dry spells. Average annual volumes, as permits typically register, are of little meaning for any entitlement claim.

While South Africa, with its well-controlled procedures for conversion of plural laws to permits, has not moved beyond some initial pilot projects for such conversion at extraordinarily high costs, all other African countries with water law reforms keep supposing that such conversion can be quick and straightforward. They all 'grant' a period of just few years (which is then repeatedly extended) to existing water users to convert their existing use into a permit by registering and applying for a permit.

Caponera, who is a keen promoter of 'modern' permit systems understands the merits of customary water rights and warns for the complexities of converting customary law into permits. He highlights how industrialized countries nurture customary water rights and institutions till today and convert only very gradually. For developing countries, he observes:

'In the process of modernizing water resources management and before introducing or implementing modern concepts of water resources policy, administration and legislation, there is the need to undertake a preliminary analysis of the existing legal practices, including the prevailing customs; this survey is necessary in order to define and delimitate clearly the existing customary and traditional water rights'. [...] 'The written recording or registration of existing customary water rights is one of the main characteristics of practically all modern water regulations. Traditional customary rights are usually recognized by subsequent water regulations on the basis of detailed procedures' [...] (Caponera 1992).

Reality is far from what Caponera supposes as 'usually' being the case. Except for South Africa's water law, as negotiated by vested water users, the water law reforms in other African countries lack any such considerations, let alone any practice of codification. Anyhow, even just the efforts to codify local living law are hazardous (Von Benda-Beckmann et al 1998; Meinzen-Dick and Nkonya 2007). In Sub-Saharan Africa, just academic studies on informal water laws are still scarce (Ramazotti 1996; Mohamed-Katerere and Van der Zaag, 2003; Van Koppen et al 2007). For Latin America, where the debate on codification and 'recognition' of Andean indigenous law has further advanced, codification is said to 'freeze' the very dynamics of communal resource management and to ignore the local specificity and responses to ever-

occurring change. It is bound to only recognize those principles that fit into state legislation and 'are not contrary' to it. The complex variety of 'disobedient rules' to state rules risk being silenced after legal recognition (Boelens 2005). If even codification of informal arrangements has hardly taken place in the water sector as yet, effective regularization into another system, which fully acknowledges any earlier plural entitlement, is even more of a pipe-dream.

So when permit systems are promulgated they simply overrule informal laws and the title holders are dispossessed, for the moment only on paper because the laws are still new and have hardly been implemented as yet. Boelens et al comment what happens if the law is implemented: 'individuals who convert their water use into a permit 'soak water entitlements off' of from collective and community-controlled frameworks'. Indeed, 'the individualization of formerly collective rights and management systems has created internal chaos' (Boelens et al. 2005). It *creates* the 'tragedy of the commons' by encouraging individuals to pursue their own individual interest at the direct expense of others and the collective as a whole.

The project 'Water rights in informal economies in the Limpopo and Volta Basin' expects similar patterns to arise in Mozambique, where informal furrow irrigation is flourishing in the upper Revue river catchment. Bolding comments: 'it is questionable whether water permits and the official, legal, recognition that comes with it, will not provide another source of patronage exacerbating the gender and equity imbalances observed. Such at least was suggested by the one instance of a smallholder irrigator acquiring a land concession (DUAT), which he subsequently used to establish control over his fellow furrow irrigators' (Bolding et al 2010; Van der Zaag et al 2010).

To conclude: water reforms' obligation to convert water uses under plural existing water rights systems into permit systems is impossible at any short term. Existing evidence of factual implementation as in Chile, highlights the creation of legal disorder in which the administration-proficient who are the quickest to obtain permits, are the winners.

2.3 Are permit systems intrinsically discriminatory entitlement systems?

This section supposes that conversion is well possible and that permit systems have become the single valid water law in an imaginary African developing country with a minority of formal large-scale water users and millions of rural small-scale users. In such situation, the question is to be asked whether permit systems are intrinsically discriminatory against small-scale users in terms of entitlement systems. For answering this question, a distinction is made between the rural small-scale users who are obliged to register and apply for a permit and those that are exempted as too small-scale.

For the first category, there is structural discrimination, which consists of the fact that small-scale users (and women even more than men), structurally, and not for their own fault, face more obstacles than large-scale users in fulfilling the obligation to register or apply for a permit before their water use is recognized as lawful. It is true that water laws reduce the registration and application requirements when volumes get smaller. However, when competition for water gets stronger, obligations are stricter, even for

smaller users – who need protection most in such conditions. The following structural obstacles for the small-scale users are generic.

Disproportionate transaction costs to access government services. Assuming that just five percent of the rural households are obliged to apply for a permit, there would be fifty thousand applications for each million rural households. Yet, government staff to serve the rural small-scale users is scarce and distant. No developing country has sufficient government officials to even just inform the rural population of new obligations, let alone to respond to so many applications. This limited presence of officials disproportionately increases transaction costs, certainly if the applicant has also to pay for transport and accommodation, which is the case in Kenya for example. Illiteracy, limited mobility and fewer means of communication in rural areas considerably add to the greater difficulties for small-scale users to simply reach government offices. While costs are disproportionate, the benefits of using a small volume of water are considerably less than for large-scale users.

Gender. Women face the above-mentioned transaction costs even more. Moreover, as for any administrative measure, there is the tendency to assume that men are the heads of households, and that permits should be vested in men's names, excluding women. This well-documented gender discrimination in land tenure is equally valid for water (Lastarria-Cornhiel 1997).

Explicit discriminatory conditions. In addition to these implicit discriminatory conditions, there can even be explicit discriminatory conditions in the permits. For example, the Water Act of 2002 in Kenya requires land titles to which only a proportion of Kenyans has access, discarding all other Kenyans from first-class water titles (Mumma 2007).

Arbitrariness and lack of recourse. On top of the intrinsic arbitrariness of government officials regarding whom they are being able to reach or not, the contents of permits are arbitrary. In informal rural areas with hardly water infrastructure and water monitoring devices, there is no physical way to realistically estimate volumes of water. Adding all water volumes used in a year to arrive at an annual average lacks evidence even more. Therefore, the volumes stated in the permit are just best subjective guesses of water officers. The lack of any objective basis to challenge government officials' judgments affects informal small-scale users in settings without much water control in particular. Moreover, the vulnerability for related corruption affects them most too. Therefore, informal users are structurally more exposed to arbitrariness and lack of recourse than formal large-scale users in contexts of considerably more water control and monitoring, and power to challenge arbitrariness. This is discriminatory.

Each of these conditions on its own would have been sufficient to conclude that administrative permit systems discriminate against small-scale users and women who are obliged to register or apply for a license.

2.4 Discrimination of exempted users or other 'special' categories

The second category of small-scale users in Sub-Saharan Africa (which does not exist at that scale in Latin America) includes those who are exempted from the obligation to

regularize water uses under other legal systems. So the question is: what is the legal status of water uses that are 'exempted' to register or apply, or are otherwise treated differently than individual permit holders? These micro-users are often the most vulnerable people, whose basic human needs for water and food are not even met.

Water lawyer Hodgson is clear about this 'curious type of residuary 'right''.

[..] There is no great theoretical justification for exempting such uses from formal water rights regimes. Instead a value judgment is made by the legislature that takes account of the increased administrative and financial burden of including such uses within the formal framework, their relative value to individual users and their overall impact on the water resources balance'. [...] While they may be economically important to those who rely on them, it is hard to see how they provide much in the way of security. [...] The problem is that a person who seeks to benefit from such an entitlement cannot lawfully prevent anyone else from also using the resource even if that use affects his own prior use/entitlement. Indeed the question arises as to whether or not they really amount to legal rights at all' (Hodgson 2004).

Obviously, an entitlement system that, by its design, relegates a majority of citizens to a second-class entitlement status is discriminatory.

A similar 'differential treatment' arises when many small-scale users in a particular area are supposed to organize into a collective to obtain 'collective' rights. The new water law of Tanzania does so, for example. One problem is that the definition of 'the community' is bound to be arbitrary. Vesting titles in 'communities' is prone to male elite capture and polarization of internal hierarchies and conflicts. Nevertheless, it can again be assumed that such problems can be overcome. Still, then, the same question arises: why are small-scale users, not for their own fault, relegated to a group right, while others get individual first-class entitlements through their permits? Again, such system discriminates against small-scale users.

2.5 Beyond dispossession and discrimination

As the above showed how dispossession and discrimination of small-scale water users is intrinsic to permit systems as single formal legal system, the question is which alternative entitlement arrangements can avoid this. The fact that states are custodians of the nation's water resources gives all authority to vest more appropriate and pro-poor entitlement systems. The problem is with the other elements of Roman water law: that one can only obtain a strong entitlement to water by having a permit. Since independence, alternative legal arrangements, which the state can promulgate with a stroke of the pen, have hardly been considered. Such alternatives should recognize and protect existing informal water uses under own governance arrangements without burden of proof, as the very minimum. Moreover, for poverty reduction and rural development, the state should provide security for small-scale and micro-scale users to make their own investments in water development to accelerate the productive use of water.

A first step is that African governments would recognize, for the first time in history, the existing reality as legitimate starting point without burden of proof, and to better understand and build on informal water arrangements. Elements of informal arrangements that contradict the constitutions, such as women's status in informal water laws, can be exposed and addressed. This is, for example, the position of the Water Resources Commission in Ghana: 'The issue of incorporating such relevant customary rules into statutory bylaws especially at the District Assembly level has been raised and discussed for quite some time. However, how to incorporate such customary water use right is an issue that needs serious consideration' (Ampomah and Adjei 2009).

A pro-poor measure for more equitable water use and development, which can be taken with a stroke of the pen, is to reform the current crude ordering of priorities by sector into a people-based prioritization. Article 11 of the License and Concession Regulations of 2007 in Mozambique, for example, allocates a (still qualified) priority to common water use (these are *de minimis* uses the Mozambican law) over any other type of use and exploitation of water. Other water uses that can in any way prejudice existing, traditionally established common uses, which cannot be practiced in another way and without justifiable sacrifices to the population, must not take place (Manjate 2010).

Another option is to assign a priority to a certain quantity of water for all, for both basic domestic uses and small-scale productive uses that contribute to meeting human rights to water and food, poverty alleviation and gender equity. Once everyone that needs such minimum quantity has been satisfied, can larger-scale users' access remaining water resources. Instead of putting single use-categories in a certain row (domestic, agriculture, environment, etceteras) the differentiation within sectors can be recognized. For example, in Ecuador, the Confederation of Indigenous Nationalities of Ecuador proposes to include in the new water law principles that prioritize water for human and domestic use and subsistence agriculture above water for commercial agriculture. Commercial agriculture, in turn, is to receive a higher priority than industrial, mining and power generation activities (CONAIE 1996, cited in Boelens and Zwarteveen 2005: 116). Another blanket tool that could be 'upgraded' to a priority use instead of a second-class exemption is the General Authorizations, as in South Africa (DWA 2006). These are site- and resource-specific exemptions that could be prioritized as one way to redress the inequities from the past.

In these straightforward ways, blanket entitlements are tools towards social justice. A condition could be that such uses should not harm smaller-scale uses of poorer people. Well-designed publicity campaigns and effective backing of corresponding claims in cases of competition are first steps to ensure implementation. Paper priority is one step. States may still need to intervene and enforce in each specific situation of growing competition according to the precise issues at stake, to democratically protect the majority of water users, especially vis-à-vis the few large-scale investors.

In the recent promotion of permit systems in Sub-Saharan Africa, the above-discussed entitlement dimensions hardly received attention. Instead, the supposed permits as

regulatory tool got most emphasis. The new permit systems were supposed to allow effective implementation of three regulatory measures: registration for a data base on water use, taxation, and water allocation (e.g., by prohibiting any new use or attach caps and other conditions for water use to the permit). It was assumed that deeply interfering in entitlement systems (converting plural water laws into permits and requiring permits for any *new* water uses) would improve regulation by the conditions attached to permits. One nation-wide permit system (as all waters are public waters under state ownership) was promoted as effective, smooth and neat vehicles to impose obligations in a public interest. As discussed in the next section, this is a myth in any situation with many small-scale users. Here, permits *weaken* state regulation, as the examples of India and Tanzania show. In countries with both informal settings of many small-scale users and formal settings with a small minority of large-scale water users, such as municipalities, irrigation estates, mines, and industries, permits can work if well targeted to this minority. However, as highlighted in Mexico, South Africa, Ghana and Mozambique, permits only work as regulatory tools if conversion of existing rights into permits is limited to the few large-scale users, so abandoned among the majority. However, implementation of taxation and data collection is leaner and more effective, if implemented on their own, with their own administrative systems as this also avoids perverse incentives.

3. DO PERMITS WEAKEN STATE REGULATION?

3.1 India

For decades Indian state governments have been aware that permits cannot work for regulating many small-scale users. If there is any area of water scarcity that needs regulation, it is in areas like Gujarat, India, where groundwater overdraft is rampant. However, a draft Groundwater Bill of the Indian National Ministry of Water Resources had been around since 1970, but no sub-national state wanted to take it (except for West Bengal recently). The government of Gujarat rejected permits altogether as potential regulatory tools, because of the new problems it would create especially among the poor. The Gujarati Chief Minister remarked, 'Can you imagine that as soon as this bill becomes a law, every Village Level Revenue Official will have one more means at his disposal to extract bribes from farmers?' (Shah 2007). This is echoed by the Water Integrity Network, which is particularly active in highlighting how permit systems, e.g. in Chile and Kazakhstan, are very prone to corruption (WIN 2009).

Ironically, West Bengal, a state with abundant groundwater resources, has recently initiated permit systems mainly for taxation. This gives the perverse incentive to governments to issue even more permits to groundwater users for more revenue collection, while the permits are simultaneously supposed to regulate and cap that water use (Mukerjee personal communication 2010). Direct water taxation, similar to land taxation as measure to discourage over-use, would have been more effective both for revenue collection and water regulation.

3.2 Tanzania

The experience in the Upper Ruaha, a sub-basin of the Rufiji basin in Tanzania in the early 2000s is one of the very few African cases in which permits have effectively been tried to be implemented in informal settings. These events are illustrative on how permit systems are promoted with the argument that it strengthens state regulation, while early implementation shows that it weakens state regulation – on top of dispossessing and discriminating most small-scale users as mentioned above. It shows the myth of the assumption that engaging in change and enforcement of an entitlement system, and essentially giving first class entitlements to existing water users governed under other legal systems, helps to regulate the same water user. This holds for all three regulatory functions assumed to be better managed with permits: legal water allocation itself, taxation, and registration (Van Koppen et al 2004).

The Upper-Ruaha basin is an area with many small-scale water users. As individuals and as groups, they informally divert the multitude of mountainous streams to enable the production of vegetables and rice for a flourishing market. In the late 1990s, the World Bank and others revived the dormant colonial water permit system in order to finally implement it in rural areas, but now with the obligation to register and, above all, pay taxes attached as well. Besides revenue generation, the World Bank also expected wiser water use: ‘once users would be aware of water’s economic value, they would reduce water use’ (Van Koppen et al 2004). Initially, the River Basin Water Officer of the Upper Ruaha sub-basin, who was in charge of implementing the revived water permits systems but now with fees attached, saw his new task as ‘showing the users the ‘cake’ of the first-class formal permits, while holding the ‘spear’ of taxation behind his back’ (Van Koppen et al 2004). He thought that providing the first-class entitlements of permits would be an incentive for water users to come forward and comply with the new obligations attached to the permits as well. In other words, by declaring existing informal water uses as less lawful until registered and converted into a permit, the state used this dispossession as a somewhat draconian, but expectedly effective means to convince water users to comply with new obligations as well.

For the first applicants, this worked. Undoubtedly, his publicity campaigns that registered water uses would obtain stronger ‘security’ before the law incited water users to come forward and register and pay. This even created a sort of domino effect. The first water user with a formal permit claimed such stronger rights to another user, without permits, for example in upstream-downstream conflicts. The latter had little other choice for upgrading their legal status than to follow and also apply for the same stronger formal entitlement. However, the basin officer’s incentive appeared short-lived. The registered, paying water users soon discovered that there was no cake whatsoever of better water security. Obviously, the Basin Water Officer could not influence climate and make the promised water available, so after a few years, irrigators discovered that there was no state-enforced ‘wet security’. The Water Officer changed his message into reminding the disappointed farmers of the clause in the Tanzanian law, as in any water law in the world, which stipulates that the entitlement of a permit was no guarantee that water would actually be available and delivered.

The 'cake' of dishing out entitlements soon appeared a tremendous administrative and legally binding burden for the state itself. The processing of the submitted permit applications, involving various government departments and a period of public announcement, as permits require by law, appeared much more time-consuming than foreseen. Moreover, the very scanty hydrological information in this largely rainfall-dependent area was a shaky basis both for 'regularizing' existing rights and deciding about newcomers. Therefore, the basin office simply put entitlements on hold. The basin office just sent written confirmations to the many applicants that their application had been received by the Office and was classified as a 'provisional' permit. This fulfilled the office's main purpose, which was to charge the annual water fees attached. This continued, although farmers paid less to the Water Office in drier years and kept complaining that the legal status of their formal right remained 'provisional' only (Mehari et al 2007). However, linking entitlement to payment appeared a perverse incentive. In sharp contrast to the law reformers' expectation that permits would lead to 'wise water use', irrigators abstracting from rivers claimed: 'I paid for my water right, so I can use as much as I want'. Without any means for government to control water abstraction, this was the farmers' interpretation of wise water use (Van Koppen et al 2004).

Not surprisingly, for collecting information about users and uses, which is an important condition for any regulation, a much quicker method was found. Instead of asking every water user to come forward and engage in long legally binding interactions, the Basin Officer conducted a quick survey to identify 573 unregistered water users, in addition to the 990 registered water users by 2003 (Msuya 2003). The total of known water users became some 1500, among the tens of thousands of rural water users in the Upper Ruaha basin obliged to apply for a permit. Obviously, picking out such arbitrary minority may be justified for regulation, but has nothing to do with an equitable non-discriminatory system of entitlements.

For taxation, which was a main driver behind the revival of permit systems in Tanzania, revenue collection appeared to be effective, but only among the few large-scale users. As estimated by the Basin Office for the entire Rufiji basin, the annual fees for basin management collected in the Rufiji basin amount to US\$50,000. Overall expenditures of the Rufiji basin office are estimated at nearly US\$225,000. These incomes were mainly provided by the few large-scale public-private and private sector water users, such as the national electricity company, and commercial farming estates. With their much larger profits and direct bank access, they easily paid. In contrast, pursuing small-scale water users required huge transaction costs, which outweighed the relatively small revenue (Sokile 2006). Organizing water users into groups of Water User Associations primarily for easier revenue collection, as the new water law also stipulates, mainly puts the burden of transactions costs with the users. In any case, a simple well-targeted water taxation measure for large-scale and organized users that ensures that revenue outweighs collection costs could have generated the same outcome. There is no need to change an entitlement system before one can do water use surveys and implement fiscal measures. There is no need for government to allocate permits *because* people only then can pay tax.

Indeed, conversion to permit systems in informal settings with many small-scale users undermines state regulatory authority by, first, the enormous administrative, legally-binding burdens without any credible, hydrological basis, which diverts scarce resources and makes the state very vulnerable to allegations of corruption; and, second, by giving stronger entitlements to the same water users that the state seeks to regulate. Evidence elsewhere highlights similar problems – and the solution of disconnecting each different regulatory measure, and implement on its own, with its own lean administration.

3.3 Mexico: taxation without permits

Turning to the regulation of the formal minority in countries with a formal-informal divide, important lessons on the efficacy of direct regulation instead of regulation through nation-wide permits can be learnt from Mexico. Mexico's water reform began as a successful stand-alone taxation measure among the well-organized large-scale users. The adoption of the 'user' and 'polluter' pay principle was operationalized in 1989 as part of the Federal Tax Law and enforced through the Ministry of Finance. From 1989 to 1993 revenue collected by the National Water Commission both in pesos and in real terms rose year by year, with a record value in 1993. In the top-year of 1993 about 92 percent of expenditure was covered from charges. However, from that year onwards, the National Waters Law of 1992 started being implemented. As in Tanzania, the government expected that promising more water security for those who complied, would support state's measures of registration and taxation. The reform revived the permits since 1612, which were now being made tradable and were tied to tax payment and waste discharge permits (Garduno (2001; 2005). The revenue declined again. Some water utilities stopped paying their levies after they had registered their permits (Garduno 2001; 2005).

By the year 2000, 327,650 water users, nearly all of the estimated (individual and organized) water users, out of a population of slightly over 100 million inhabitants, had been regularized – that is, their applications were recorded in the Water Rights Public Register. Ironically, the accessibility of the Public Water Rights Register on the intra-net and the transferability of rights made it easy to sell another person's water right, without that person having a clue about it (Garduno personal communication 2006). Moreover, the Register remained a separate data base, with the major challenge to keep the information updated and avoid becoming a cadastre-disaster. Its format was neither appropriate for hydrological modeling about water use nor for revenue collection, which remained separate administrations. Regulatory measures are too specific to be all lumped together into one permit.

3.4 Ghana

The factual implementation of the new water law of 1996 in Ghana highlights how Ghana picked out the merits of taxing the formal minority, while basically stalling other issue of the new permit systems. Ghana simply used the new permits to set up a new billing system for the small minority of well organized water companies, associations or few individuals, to fund the operation of the Water Resource Commission. This has

worked well. As in Mexico, Ghana could have done this without any change in legal system with all dispossession issues mentioned above.

Since 1996, the Water Resources Commission in Ghana has set up a Water Use Permits Data Base, which is essentially a volume-based billing tool and can generate the invoices and record payments of fees for water use. By 2008, 154 formal large-scale users were entered as 'permit holders' (see table 1).

In the same year of 2008, a total of 208,718 Ghana New Cedis (USD180,000) was collected from these 154 permit holders. This is 40 percent of the amount invoiced (Ampomah and Adjei 2009).

However, even the simple step of merely registering the millions of all other water users than these 154 large users has hardly advanced as yet. For this, a separate data base is envisaged: a Water Use Registration Data base. These include the hundreds of thousands small-scale water users across the country that irrigate more than one hectare. These are to be registered through Ghana's 161 District Assemblies. However, up till now 'only a few have shown enough commitment towards the registration of water users' (Ampomah and Adjei 2009). Apparently, there is little incentive to register for the sake of registering, let alone engaging in the legal dimensions. For hydrological information collection, surveys, remote sensing and modelling are much more cost-effective. For legal issues, permits serve a purpose for regulating newly entering large-scale enterprises, such as mining. However, for customary rural uses permits are even contested by the plural other laws. Those extra problems could have been prevented if the 'permitting' had been a straightforward fiscal measure for the 154 large-scale users, or a clearly regulatory tool (with minimum entitlement which would undermine the very regulation) for newcomers. Both those newcomers and government should, above all, respect prior and future water uses under plural water laws as well.

Table 1. Permit holders and volume of abstraction as at 2008 (Source: Water Resources Commission, cited in: Ampomah and Adjei 2009)

Water Use Activity	No of Permits Holders	Volume of Water Abstraction (10⁶ m³/yr)	Avg. volume per user (10⁶ m³/yr)
Municipal /domestic	94	224.67	2.39
Domestic	11	1.69	0.15
Industrial	5	8.05	1.61
Aquaculture	7	4.18	0.60
Irrigation (Private)	7	92.72	13.25
Mining	23	58.56	2.55
Recreation	2	32.89	0.02
Food Processing	5	663.20	0.13
Total	154	390.57	2.54

3.5 South Africa: registration and taxation without permits; continued inequities

South Africa's experiences also underscore that there is no need to engage in changing its many plural water rights systems before one can register for data collection or tax. However, unlike Ghana and other water-abundant African countries, water entitlement and allocation issues have become contested between the vested, predominantly white, formal and large-scale water users who still seek to expand their water uses, and the large majority of 'have-nots' of the historically excluded people. Clearer than in any other water law in the world, the latter's interests are stipulated in the National Water Act's aim of redressing inequities from the past through distributive water reform. The contestation occurs mainly within government itself.

For registration, immediately after promulgating the National Water Act in 1998, the government obliged every user, except the micro-users, whether lawful or not, to register into the data base of Water Authorization and Registration Management System (WARMS). Many vested existing users saw the obligatory registration of existing water uses as a first step towards conversion into a permit. While the term 'Authorization' may well have suggested such entitlement, the government soon realized this potential confusion, and made clear that registration was no entitlement in any way.

An important opportunity of the WARMS data is that it allows quantifying the distribution of the volumes of water use among numbers of people. While vital for well-targeted regulation, the immense inequities in water use that were found also appeared politically sensitive. The number of registered users in WARMS is 68,500. Even *within* just this relatively very small number of registered users, the 10 percent largest users in each province use between 77 (Limpopo Province) and 93 percent (Gauteng Province) of the total (registered) volume of water. So by targeting just these 10 percent largest users, 77 – 93 percent of all water resources would be covered (Cullis and Van Koppen 2008). The same was found for registration in one basin, the Inkomati basin, as depicted in figure 1. This highlights the disproportionate efforts even just among South Africa’s 68,500 water users. Even simple administrative measures are bound to entail disproportionate costs for reaching smaller users.

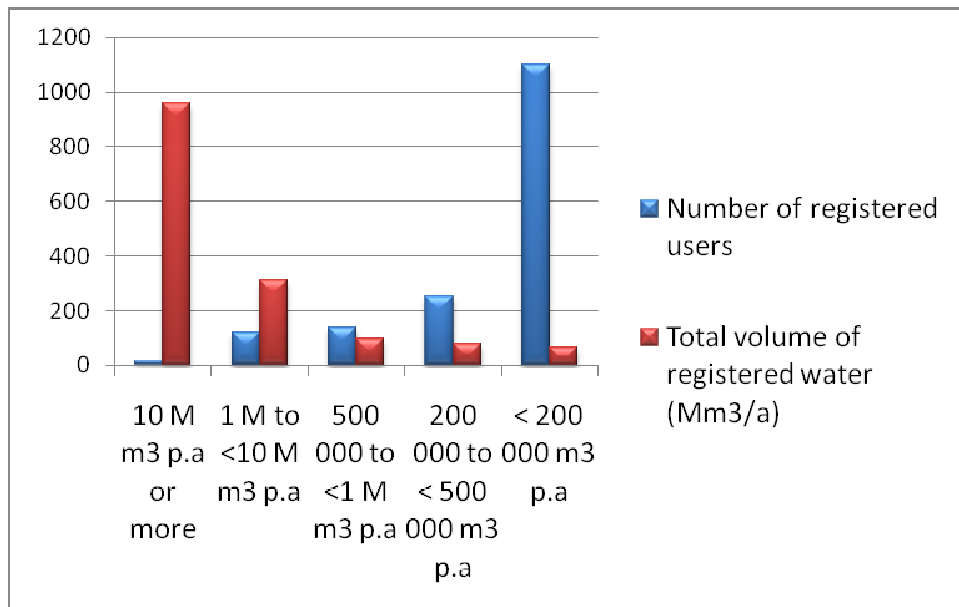


Figure 1: Distribution of registered water use in the Inkomati Water Management Areas. Source: Schreiner et al 2010.

The inequities are even more revealing, and embarrassing for the historically vested water users, when WARMS data are complemented by total population census data and their water use estimate. Focusing on the country’s rural areas where water use is largely individual (unlike urban areas with municipal utilities), the non-registered rural population constitutes 98.8 percent of the total population. South Africa’s water resource planners use the rough estimate of about 400 liters per person per day for these users in their hydrological data bases and models. The total registered volume of the registered 1.2 percent of the rural population is 95 percent of the available water resources. This equals a Gini Coefficient of the distribution of water use of 0.99 (Cullis and Van Koppen 2008). For the Olifants basin in South Africa, it was found that

doubling the water used by the unregistered majority would imply that the registered users have to share 6 percent of their current uses (Cullis and Van Koppen 2006).

For government, the WARMS data base mainly serve as billing system, to complete the list of water users to invoice for the considerably higher and stricter water tariffs that were set in the new Act. For the financial year 2002/3 52,000 invoices were sent to individual users, or companies, or utilities, or irrigation associations (out of the estimated 44 million inhabitants). The amount of water use and water resources management charges collected was about USD 330 million (Seetal et al 2005). This number of users concerns 80 percent of the water resources, which are now brought under cost-recovery (RSA, National Water Resources Strategy 2004).

Significantly, water planners hardly use the WARMS system, but make aggregate estimates for their models. (Simple hydrological estimates are effective to account for the large majority of water users, especially the most vulnerable who use hardly any water anyhow). Their involvement in water allocation is at aggregate level, where they declare basins as stressed or not, and, hence, open for new uses or not, whether by formerly included or excluded water users. In stressed areas, this view stifles the inequities of water use and discards any effort to redress inequities from the past – a critique that is difficult to mainstream within water resource planning. Most focus of national water resource planning is on the few large-scale users, which includes estimates for ‘the environment’ of around 20 percent of the total water volumes available. Estimated smaller uses are in the errors of hydrological models. Redressing inequities in water use is hardly on their agendas.

On the ground, water permits appeared a blunt tool for redressing inequities from the past and better regulating the few large-scale users. Above all, the processing of permit applications from user to central government level and back appeared a huge administrative burden, favoring the administration-proficient. The conversion of existing lawful water uses into permits risked being driven by vested existing lawful users. Although existing uses were declared lawful, some started formally applying for a conversion of their existing lawful use into a permit, as a first-class tradable right with a monetary value. Initially, the government considered a moratorium on such applications in order to save time and resources, but then decided to enter the negotiation; some government officials try hard to attach strong Broad Based Black Economic Empowerment conditions to the new permits.

The permitting of *new* water uses appeared to benefit the vested users as well. Out of the 1200 newly issued permits for new water uptake by 2006, only two percent were for non-whites. The obligatory applications for new water use take several years to process. Without the speedy responses that the Act requires government to provide to applicants, applicants (and their lawyers) can (and incidentally do) take the state to court. Permits appeared an easier process to get access to the nation’s water resources than the earlier laws. For vested users, filling a form is relatively easy compared to the tough negotiations with fellow riparian land and water owners to obtain a share of the flow, as the riparian doctrine requires. Being tied up in the legally-binding aspects of

processing applications and maintaining data bases of permits takes disproportionate time and resources even from a relatively better sourced government as the South African government. Hardly any time is left to really investigate new water uptake and consult those potentially affected, as permit systems formally require. Even less time is left to thoroughly discuss more regulatory obligations, including enforcing conditions for Broad Based Black Economic Empowerment. The regulation of large-scale users would be more effective if it was well targeted on those few users who use most water, and if all smaller users, which warrant disproportionate administration costs, were exempted in a General Authorization. As argued above, prioritizing such General Authorization would be an easy and effective step towards legal redress of inequities from the past.

However, another way in which the vested powers in South Africa protect their existing lawful water uses is through the myth that one first needs to change a legal system before one can regulate. As mentioned, South Africa envisages the conversion of existing lawful water uses under one of its plural water laws into area-wide blanket permits through site- and time-bound projects of 'compulsory licensing'. These are especially foreseen in areas with greatest water stress, so where distributive water reform is most warranted. Costly pilot projects were started, but have not been implemented as yet. The discourse dominated by the vested powers tightly ties water (re-)allocation for historical justice to the implementation of compulsory licensing. Requests by Black 'have-nots' for any more water in stressed basins is typically refused with the argument that there should be first a project of compulsory licensing being implemented. The many known measures that the state as public trustee could already apply now in stressed basins, e.g. declaring priority uses and reducing the 'assurance of supply' of vested users, remain on the shelves. Ironically, while registration and taxation is straightforwardly applied on any water use governed by whatever plural law, water re-allocation for historical justice is stalled with the argument that the legal system should entirely change first.

South Africa's experiences entail important lessons on what other African countries, which all have a formal-informal dichotomy can expect when their water resources become scarcer as well. Mozambique already shows that the risks of water grabbing by powerful users, including foreigners, under permit systems are high, and that data collection and taxation are more efficient as separate measures.

3.6 Mozambique

The Mozambican experiences also show that taxation and registration and data collection are well, if not better, possible without engaging in changes and reinforcements of entitlements through permits. The Mozambican government already operates a 'Commercial Department' that collects revenue for water services but also other water uses, such as recreation. A 'Technical Department' already collects data about de facto users through Mozambique's growing number of operational regional administrations. ARA-Sul, the southern regional administration, for example, had registered large-scale users in the lower Limpopo basin. Out of the largely rural population of 1,300,000 people in this basin, a total of 171 large-scale users, mainly irrigators on 4525 ha had been registered. HICEP (Hidráulica de Chokwe Empresa

Pública) represents one registration; it manages 3500 ha fragmented irrigated land in the Chokwe scheme, which consumes 75 percent of the total water volume registered. 132 individual users and 37 organized users account for the rest (ARA-Sul, user cadaster lower Limpopo basin, cited in: Vilanculos and Macuacua 2010).

These two regulatory measures had developed independently of the formal requirement for permits as required according to the 1946 water law, when Portugal explicitly prescribed Roman water law for its 'province' Mozambique and declared its waters as being public waters. In this legal tradition, and without debate on the appropriateness of permits for Mozambique, the 1991 Act with its follow-up 2007 Decree to Regulate Licenses and Concessions, revived this tool, and, critically, now also with tariffs. A 'Legal Department' seeks to implement this now, adding another layer of administration instead of building and improving the already existing other two administrations. A total of 137 permits has been allocated by October 2010, 70 of which are in the lower Limpopo basin (Manjate personal communication 2010).

An expected advantage of (nation-wide) permits lies in the better ability to interfere in water allocation, especially in the country's stressed basin, the Incomati basin (Manjate personal communication 2009). However, as in South Africa, there is also the risk that permits become the easy way for large-scale users across the country to swiftly obtain first-class entitlements to the nation's water resources. This was the case for the foreign company Procana, which planned and started a new sugarcane plantation in the lower Limpopo basin river in 2007. The negotiations up to the highest government levels about a permit went smooth, conforming to the country's investment strategy which welcomes foreign investments. Paper permits primarily reflect these broader negotiations. While Procana unexpectedly had to close down again in 2009, it had a temporary permit, giving right to 555 Mm^3 /annum, which is more than the total current use of 524 Mm^3 /annum.

Moreover, as also calculated by Van der Zaag et al (2010), the water resources available in that catchment are insufficient to meet Procana's estimated future water use if that is combined with other planned water uses by upcoming joint ventures with agrobusiness, especially in the large Chokwe irrigation scheme. All planned expansions together envisaged some 70,000 additional hectares of irrigation. Yet, hydrological modeling on the basis of available data suggested that there were only water resources available for some 40 – 45,000 hectares irrigation (Van der Zaag et al 2010).

In these water resource models, small-scale informal water uses were estimated as 8000 ha of traditional irrigation, including soil moisture use in wetlands. This was just half the estimated environmental flows and less than a quarter of the current total water used. Under all projected expansions, the share of this majority of users would dwindle to just six percent of the envisaged total. These users would seriously be affected by the overuse of the few large-scale users (Van der Zaag et al 2010). Obviously, formal water use estimates are significantly more cost-effective to render small-scale uses formally visible than registering, let alone even legally processing permit applications. Assuming

all informal water users have one hectare, up to 8000 users would bring enormous logistic effort, if logistically feasible at all, to capture less than a quarter of the resource.

The lesson from these experiences is again that both revenue collection and knowledge about use and users, with estimates for the majority and individual registration for the handful of large users, are well possible without permits. It would have strengthened existing administrations and data bases, instead of adding another data base. Also, permits can be an easy way for powerful large-scale water users, endorsed by larger interests, to bypass any water resource planning. For informal small-scale users, the issue is that their current and future water use is integrated in water resource planning in order to protect and allow for expansion of the water use in national or basin planning. Obviously, simple estimates and their ground truthing would only cost a fraction of the administrative resources required to capture relatively small volumes of water, if logistically feasible at all, of all individual permits. Small-scale users on the ground require strong negotiations by government with potential new large-scale users who threaten their water uses most, and protection against the dispossession and discrimination discussed in section two.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Entitlements

Over 2000 years of Roman water law's vesting of ownership of water resources in rulers and requiring permits to dispossess conquered people is leaving a deep imprint in Sub-Saharan Africa and the civil-law international community that promotes its revival as the assumed neat, administrative way to get order in the management of this fugitive, disorderly natural resource. The fact that ownership of the nation's water resources has shifted from the colonial rulers to the independent state is a step forward, obviously. The question is what states as custodian of the nation's water resources can and will do with their far-reaching powers. The following is recommended.

- The two pernicious elements of Roman water law in rural Africa that can be removed with a stroke of the pen are: first, the assumption that state ownership necessarily goes together with the cancellation of any other plural water laws (as the purpose of the colonial powers was) and, second, that the issuing of permits (or exempting) is necessarily the only possible way to allocate formal entitlements (as the way for the colonial powers to ensure that allies close to the colonial administration could carve out their individual first-class entitlements).
- Instead, governments can recognize all plural water laws, especially those of the poor, as lawful starting point. The uses that are vital for livelihoods and the wealth of functioning elements of plural water laws that are not contradictory to the Constitutions should first be fully understood, quantified, and built upon. Other elements, such as gender discrimination, are to be overcome.
- This stops, for the first time in history, the formal dispossession of rural informal small-scale water users, the majority of citizens. It also stops the factual

discrimination of small-scale users by an administration-based entitlement system that is logistically unable to administer them.

- Other legal tools, such as prioritization, can empower small-scale users to achieve their human right to water and food, also with a stroke of the pen.

4.2 Regulation

The assumption that government becomes a stronger regulator by enforcing permit systems is a myth. The contrary is found. Large numbers of small-scale users cannot be regulated individually. By trying so, governments are burdened with setting up and updating an expensive legally-binding administrative system. They render themselves vulnerable to allegations and real occurrence of corruption and continued accountability to powerful permit holders and their lawyers. It appeared naïve to assume that ‘temporary’ dispossession and promises for more water security in order to make water users to ‘convert’ their existing use into a permit, could hold at long-term.

Straightforward, lean measures to tax and register the formal minority are already fully efficient both for fiscal taxation and data collection and modeling about users and uses.

For state regulation in water allocation, simply recognizing existing water uses under plural laws holds more authority within state hands than explicitly converting those into first-class entitlements. Allowing new uptake of water use is a negotiation process, whether through permits or otherwise, in which the state should put its conditions to those who need to be regulated, and take away conditions for those whose water use is to be encouraged – certainly if the conditions cannot be met by the state itself, and entail dispossession and discrimination of its citizens.

Therefore, the following is recommended.

- States can tax and collect data more efficiently as direct, lean measures with own administrations; there is no need to first change the water entitlement system. On the contrary, linking opposite measures like water curtailment and taxation entails perverse incentives.
- Permit systems can be reformulated as targeted taxation measures for the few formal users, if clearly disconnected from entitlements. That avoids the burden of including all those who are not taxed and engaging in cumbersome conversion processing for those who are taxed. It can well target those who can and should pay, avoiding situations when logistic costs of trying to reach everybody outweigh any net revenue.
- Small-scale uses can be included in water resource planning and modeling that underpins government decision-making through simple, straightforward estimates of their use and further ground-truthing. This is more than adequate as a start, also in the light of the disproportionate efforts to capture relatively small total volumes. Sound estimates (e.g. surveys, remote sensing) avoid burden of proof for the users and unrealistically immense logistical burdens for governments.

- For water allocation, recognizing existing water uses keeps more authority in state's hands than giving first class entitlements precisely to the administration-proficient whose water use would need regulation and curtailment most, in cases of scarcity. The state's challenge is to negotiate conditions in the public interest, especially for newcomers.
- In sum: lean taxation and data collection avoids dispossession and discrimination, and frees up resources to return to history's most effective and sustainable solution to address water scarcity than legalities: the development of Africa's abundant water resources to make more water available to all, in particular the poor.

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