

4 Dispossession at the Interface of Community-based Water Law and Permit Systems

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Abstract

This chapter challenges the assumption that permit systems are the best legal device to address the challenges of water scarcity in the 21st century, as widely held in the global trend of water law revisions. It analyses the origins of permit systems and their dual obligations and entitlement dimensions in Roman water law. It then highlights their differential development paths in high-income countries compared with middle- and low-income countries. As argued, permits may work in high-income countries as a hook for governments to impose obligations, like registration, taxation or waste discharge charges. In exceptionally arid closing basins, like Australia and the western USA, the century-old permit systems may facilitate water sharing, including trade. However, in middle- and low-income countries in Latin America and sub-Saharan Africa, permit systems were introduced by the colonial powers with the primary goal of dispossessing indigenous water users of their prior claims to water. Evidence from Chile and elsewhere shows how 'modern' water law revision risks reinforcing this colonial legacy for the large majority of informal water users. Permits as individual water rights based on an administrative act, first, ignore the intrinsically different nature of communal indigenous water rights regimes; secondly, favour the administration-proficient; thirdly, may entail explicit discriminatory conditions; and fourthly, discriminate against poor women even more than poor men. The chapter concludes with recommendations for formal legal tools that strengthen water entitlements of informal small-scale water users.

Keywords: water law, formal water rights, permits, customary water rights, Roman water law, water trade, Chile, sub-Saharan Africa, informal, poverty, gender.

Rationale, Aim and Structure of the Chapter

Background and rationale

The present chapter focuses on the highly problematic interface between community-based water law on the one hand and permit systems (also called administrative formal water rights, licences, concessions, royalties or leases) on the other. It is well known that both community and

permit systems coexist, though not necessarily smoothly (see Meinzen-Dick and Nkonya, Chapter 2, this volume). In particular, as Boelens *et al.* (Chapter 6, this volume) highlight, after the colonization of the Andes, when permit systems were imposed over existing community-based systems, they created conflict and divested indigenous peoples of their claims to water and its use and management. At the same time, this imposition impacts the ways in which communities and their allies can engage

with the contemporary state in the future design and negotiation of alternative water management arrangements.

A closer look at this interface is critical because permit-based formal water rights are now also rapidly gaining popularity in the region with the largest proportion of indigenous and informal water users: sub-Saharan Africa (see Meinzen-Dick and Nkonya, Chapter 2, this volume for the rationale of the proponents). There, neither the risk of dispossession by superimposition of permits over the widely prevailing indigenous water governance arrangements nor the alternatives emerging in Latin America have received much attention.

Fully fledged permits are written certificates that state: 'such matters as the approximate location of the land to be supplied, the purpose(s) for which water is sought, the source from which it is to be drawn, the proposed point of diversion, the volume to be diverted, the nature of existing and proposed hydraulic structures, and drainage and treatment' (Caponera, 1992). Permits entail the 'agreement to abide by conditions imposed in the permit' (Hodgson, 2004), usually for a fixed duration after which a review is performed. Permits are the legally binding contracts between the state and individual or organized water users.

Permit systems are now being promoted as the single most effective legal device to address the water management problems of the 21st century. They are increasingly perceived as a standard ingredient of Integrated Water Resources Management (IWRM). Virtually all water law reforms of the past few decades have introduced or strengthened this legal device: in high-income countries such as the UK in 1963 and in France in 1964; in middle-income countries in Latin America, e.g. Chile (Water Code of 1981) and Mexico (National Waters Law of 1992); and in low- and middle-income countries in sub-Saharan Africa, including Mozambique (Ley de Agua 1991), 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, and currently redrafting the law), Zimbabwe (Water Act No 31/1998), South Africa (National Water Act 1998), Burkina Faso (Loi d'orientation relative a

la gestion de l'eau 2001) Kenya, (The Water Act 2002) and Swaziland (Water Act 2002).

As an intrinsic part of permit systems, these new water laws invariably confirm and strengthen the role of the state as trustee, owner or custodian of the nation's water resources. They typically increase the scope of water resources declared as being public and so under state control, for example, including groundwater as part of public water. Finally, they tend to expand the uses of water under state control requiring state authorization through permits including, for example, waste discharges.

Obligations, entitlements and dispossession

There are two dimensions to a permit (or administrative water right): (i) an obligation dimension (as the name 'permit' conveys); and (ii) an entitlement dimension (as expressed by the name 'right'). Users' obligations are conditions attached to the permits. Permits serve as a 'hook' for the state to impose such obligations. Not surprisingly, many government water managers tend to be most interested in this obligation dimension as they expect permits to be vehicles allowing more effective regulation of water resources. Global debates on permit systems often refer to this role as a hook to impose obligations. An exception is found in Latin America, where the focus is on the entitlement dimension, a point returned to later. For example, in high-income countries, 'the polluter pays' principle is increasingly implemented through waste discharge permits. Under-resourced governments in sub-Saharan Africa, advised and financed by international organizations like the World Bank and donors, are often attracted to these systems, in part because they can provide financing for the basin organizations, as these international organizations often prescribe to establish as a conditionality of aid. The obligatory registration of water users also provides indispensable information for water managers about the use of the resource that is to be managed, certainly in low- and middle-income countries where such information is largely lacking.

Legally, though, permits are only one way of imposing obligations. States have fiscal, administrative and policing tools that can achieve the

same purpose. As found in Mexico, Tanzania, South Africa and elsewhere, these other methods may even perform considerably better in enforcing obligations, at least if well targeted at specific water users (van Koppen, 2007, unpublished).

It is beyond the scope of this chapter to discuss the obligation dimension of permit systems in further depth, except in the sense that the effectiveness of permits as a hook to impose obligations fully depends upon the way in which the other dimension, the entitlement dimension, works out. This chapter focuses on the latter.

As argued here, for the Andean region as well as for sub-Saharan Africa, permit systems boil down to the formal dispossession of rural informal water users who manage their water under community-based arrangements. What is at stake becomes clear in the case of Ghana, where the legal power of the traditional authorities, or 'stools', and the customary links between land and water rights are still strong enough to provide a voice that rural communities elsewhere often lack. There Sarpong (undated), an expert in water law, made the following comments on The Water Resources Commission Act of 1996 and its establishment of permits:

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. Significantly, water in view of its appurtenance to land, has all along been regarded as part of land. The Constitution of 1992 recognizes customary landholdings and bars state intervention and/or appropriation of lands except under stringent conditions laid down under Article 20. Indeed, the 1992 Constitution puts behind us the era of unbridled acquisition of land without payment of compensation. 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. If the Constitution provides the regime of land tenure ought to be in conformity with customary law, then any attempt by the state to fashion out a separate regime for water that runs counter to this constitutional edict will offend the letter, if not the spirit, of the Constitution. 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.

It is remarkable indeed that this dispossession of indigenous water rights has received so little attention up till now in sub-Saharan Africa. One explanation may be that the colonial water laws which, on paper, entailed dispossession at a large scale, were only partially implemented. Water administrations focused instead on gradually formalizing water sectors of settlers involved in large-scale irrigation, mining, urbanization, hydropower and upcoming industries. It was only recently that, under the banner of IWRM, water laws were revised to include permits more explicitly and nationwide. Now nationwide laws incorporating permit systems are also implemented with more force. The good news is that the limited implementation in sub-Saharan Africa still allows timely adaptation of the paper laws in accordance with the lessons that have been learned by now.

Structure of the chapter

For a better understanding of the rationale for and double-sided nature of permit systems with obligations and entitlements, a closer look at their historic origins is revealing: the second section (Roman Water Law) and the third section (The Transformation of Roman Water Law in High-income Countries) highlight these origins.

This history highlights how dispossession through the powers of the ruling aristocracy has been contested since the early 1800s and that it was only recently that permit systems became more popular again. The older permit systems in arid areas in former colonies, in particular in high-income Australia and the western USA are

exceptional, although much cited, and beyond the scope of this chapter¹ (van Koppen, 2007, unpublished). The point is that both the recent and older permit systems work in the very specific context of highly sophisticated and formalized water economies in fully industrialized societies. This specific context tends to be ignored when the international donor community finances their replication in low- and middle-income countries of the south with entirely different settings.

In the south, the vast majority of water users are informal. As primary water takers, they develop their own water resources. The lack of state-sponsored infrastructure and water management institutions means that self-initiative and climate determine water availability. Yet, public water and permit systems, without many obligations attached, have already existed since the colonial era. One reason for this explored in further depth in the fourth section (The Colonial Legacy of Water Law in Latin America and Sub-Saharan Africa) is the still omnipresent legacy of the colonial water laws in Latin America and sub-Saharan Africa.

The fifth section (Permits as Property Rights in Low- and Middle-income Countries Today) develops a more abstract analysis of the resulting water rights systems in low- and middle-income countries in these two continents today. It exposes the essence of permits as formal entitlements to a public and shared resource that are basically vested by a mere administrative act. While administration as a basis for rights to water may be meaningful in the highly controlled conditions of high-income settings, such a legal system is ludicrous in societies with deep divides between the administratively knowledgeable, who can easily obtain such paper rights, and the large majority of informal users who cannot, or, if they can, can often only do it too late.

The sixth section (Resource Grab by Design: Evidence from Chile and Elsewhere) confirms this essence by tracing the real-life implications of permit systems for the earliest and best-documented case in the developing world: Chile. The seventh section (Discrimination by Water Administration) focuses in depth on two generic sets of discriminatory processes at stake when permit systems with their seemingly 'neutral' and 'orderly' administrative measures are

imposed over informal rights systems in societies with deep administrative divides, not only in Chile, with its minority of informal water users, but even more so where the informal sector is larger. Conclusions and recommendations, particularly for sub-Saharan Africa, are given in the last section (Recommendations: challenging the colonial legacy of dispossession).

Roman Water Law

The dispossession dimension of permit systems has existed ever since the Romans invented the famous notions of public as opposed to private water and the requirement to obtain permits for the use of public water. From the outset, permits served the double purpose of providing the hook for the state to impose obligations *and* dispossessing conquered tribes from their existing claims to land and water resources. Caponera's (1992) fascinating classic analysis of historical and contemporary water law provides the following information, (pp. 29–48) although he, as most other water lawyers, has never explicitly mentioned the element of dispossession.

Throughout the 1500 years of Roman expansion, from 1000 BC till about AD 500, the core principle of Roman water law was that collectivities classified water resources into public waters² subject to regulation by the collectivity, for example for navigation (*res populi*, and later *res publica*) on the one hand and private waters, where the private title-holders (and his neighbouring private title-holders) all had rights to use and abuse surface water and groundwater as they liked (*ius utendi et abutendi*), on the other. This included the right to sell water. The underpinning 'statement of principle' that running water, like air, was a thing common to everyone (*res comunis omnium*) to which no one could claim ownership because of its nature, remained throughout, although with limited practical implication other than the classification mentioned.

While these core principles stayed, important changes took place with regard to 'collectivity', 'public' and their hierarchies. By 500 BC, 'collectivity' was still confined to the three agricultural communities founding Rome and the Republic in Latium immediately surrounding

Rome. By AD 500, history's early and aggressive conquest of neighbouring tribes and their land and water resources had led to an empire stretching from continental western Europe to Byzantium in the Near East. From the very outset, the classification of land and water resources as public versus private was linked to this military conquest. Initially, the legal status of water entirely followed that of land: springs and artesian wells were appurtenances of land, so if land was declared as being public, all water running, springing, lying or gathering thereon was deemed public. All water that fell within private land (rain, groundwater and minor water bodies) was deemed private.

Thus, in these early days of Roman conquest, the 'lawful' way to appropriate territories conquered and, hence, their water resources, was typically by ranking it as 'public' land. Public land also included all mountain land and such strips of land marking the borders between existing colonies or, within a colony, between allotted plots of land. These borders often corresponded to a perennial river and, sometimes, to streams – typically reliable borders for delimiting land. As a consequence, all rivers and some streams, the springs feeding urban aqueducts, mountain lakes and such rainwater as was collected by natural mountain pools or artificial tanks, were also declared as being public. In later phases, the Romans even further expanded their definition of waters that were seen as public. All perennial rivers and some non-perennial watercourses became 'public rivers' (*flumen publicum*). In the last two centuries of the Roman Empire, more non-perennial rivers were included in this category.

While more waters became 'public,' the 'public' itself that owned the water resources narrowed to reflect the evolving Roman centralizing hierarchies into, ultimately, the Emperor. Initially, some autonomy was left for conquered tribes. In the Republican period until 27 BC, when the legal regime of water ownership was extended from Italy to the provinces conquered, water administration fell under the responsibility of the Roman governors in territories entirely subject to direct Roman rule. However, in territories governed by a treaty, a large degree of autonomy was left to the local authorities, also in the field of water administration.

After the Republican period, power gradually shifted from the 'people' to the Emperor and the Senate. From the third century AD onwards, this diarchy further evolved toward absolute monarchy, as all powers were ultimately concentrated in the hands of the Emperor alone. The sovereignty of 'the people' was transferred to the Emperor, also in water administration. In Italy and the provinces, water administration responsibilities passed entirely to the Emperor's vicars, parallel with the gradual suppression of the surviving local autonomies. *Res publica* came to mean only 'people's right of use' (*res in publico uso*). Moreover, throughout the Roman world, the Senate of Rome had supreme control of state finances, both with regard to public expenditures (including public works) and to revenues (including water rates). In sum, by declaring land and increasingly more water resources as being public, more existing customary water rights regimes were superseded by the more authoritarian Roman water laws, controlled by the more centralizing Roman administration.

The new 'right' to use the expropriated 'public' waters was through the administrative permit or concession. In some situations – well discussed in the literature ever after – permits kept serving as a hook to impose obligations in return to clear water service delivery by the administration. In the city of Rome, for example, a specialized technical water service and administration governed water use. The administration also kept registers both on water sources and availability, and on distribution, with one on modifications of water rights, water users and water distribution. As soon as a concession came to an end, this was recorded and the water returned to the administration for reallocation to a new concessionaire.

In most cases, nevertheless – although quite ignored in the literature – the requirement of 'administrative' authorization of public water use through permits had very little to do with delivering any water service. Its main purpose was to allow the rulers to 'lawfully' appropriate resources from conquered tribes, at least on paper. Gradually, administrative concessions became the only legitimate mode of acquisition of a right to divert water from public watercourses for irrigation and/or industrial purposes. Also, it was generally prohibited to divert water from navigable watercourses. The only two

ways to recognize existing water rights were, first, through the legal provision that some long-lasting use or *usus vetus* could evolve into a mode of acquisition of a right to use public waters and, second, through what Hodgson (2004) calls *de minimis* uses. The latter are micro-scale uses for domestic purposes, home-stead gardening, small-scale livestock watering and sometimes a bit of irrigation.

To summarize the old Roman pattern that has remained so very intact ever since: by declaring land and waters as 'public', the authorities representing 'the public' could impose their ownership and rules. The declaration of land and waters as being public formally nullified prior resource claims of conquered tribes. The only way to regain 'lawful' access to their former water resources was to recognize the authority of the powers that were trying to establish their rule by asking *them* permission, thus negating own rules and surrendering to the new owner of the water resources. The new authority then 'granted' administrative authorization in the form of permits.

The Transformation of Roman Water Law in High-income Countries

In Europe itself, Roman water law was profoundly transformed and only revived very recently under entirely different conditions. As Caponera's (1992) study highlights, after the fall of the Roman Empire in the sixth century AD, Roman water law blended with customary laws. Yet, the emperors, kings, dukes and higher feudal lords kept their claims of ownership over land and water, which they vested, from the top down, in their lower-ranking vassals. In the feudal system there was no concept of private ownership of water, and the feudal lords had full control over land and water within their jurisdiction, including the authority to charge levies.

It took more than 1000 years before this changed. In the civil law countries, i.e. France and most of continental Europe, the aristocratic powers ended, among others, with the French Revolution. A bourgeoisie emerged as the new social class with new economic interests. In civil law countries Roman law was revived, but this time to strengthen the private rights of the

emancipating users against state interference. The Napoleonic Code of 1804 classified water into private waters (located below, along or on privately owned land) and public waters (which were confined to 'navigable' or 'floatable' waters only) requiring a permit for rights of use (with related water rates).

Around the same time, users also exerted their claims in the UK. Common law was adopted, which held that water could not be owned, neither by the Crown nor by individuals, but would be owned by all (*res communis omnium*). Through a (riparian) use right, the riparian doctrine that evolved out of this new UK common law allowed riparian landowners the free utilization without the need for administrative intervention. The riparian doctrine gave equal status among riparians and strong rights to the riparians vis-à-vis newcomers beyond the riparian strips, who had to negotiate hard for their entrance. The many laws, ordinances, regulations or other legal enactments for administering or regulating specific subjects related to water were bottom-up. They all sprang from needs arising from local conditions. A similar system developed in the eastern USA.

During the following 150 years profound economic, social and political changes took place in Europe. Extensive state investments were made in public infrastructure to catalyse the evolving water economies. In France, the definition of public waters slightly expanded after 1910, to include waters that the state needed to acquire for the purpose of public works. Water economies developed in which public agencies, parastatals, public-private partnerships, hydropower plants, municipal and industrial water service providers and private companies established effective technical and institutional control over the nation's water resources. Gradually, almost all former primary water takers became secondary users as clients of these water service providers or as members of irrigation groups and water user associations. Extensive institutionalization took place, which assured that virtually all water users were known to the relevant authorities, registered and were paying their subsidized bills. Pollution issues became more important. The 'environment' emerged as a new water user in its own right. Stronger state control was needed and accepted for such regulatory roles. Further

development and harmonization towards permit systems was *only by then* increasingly seen as a legitimate ‘hook’ to impose such obligations in a legitimate public interest.

For example, in France, it was only in 1964 that more waters were included in the public domain, such as that necessary for domestic water supply, navigation and agricultural and industrial production. And the law no longer spoke of private waters but of non-domianial waters – but they still required compensation in case the state revoked. A new criterion of ‘public interest’ was also introduced at this time, which further limited the sector of privately owned waters (Caponera, 1992, p. 77).

In the UK the common law riparian system also changed with the Water Resources Law of 1963, when licensing for the abstraction of water was imposed generally by statute. An authority became responsible for authorizing water abstractions above certain thresholds. Nevertheless, many features of riparianism were preserved. The common law notion of water ownership as being vested in the whole community (*res communis omnium*) was also preserved: common law countries avoid the expression of ‘water ownership’ in legislative texts. Instead, the texts generally declare that the state has the power to control water utilizations (Caponera, 1992, p. 114).

Significantly, the expansion of public waters requiring permits in high-income countries was accompanied by the full recognition that there are plural legal regimes to govern water. In common law countries, a large part of formal entitlements still remains attached to customary law under the name of common law. In other countries, customary arrangements are also recognized, if not preserved. For example, in the Netherlands, the centuries-old customary water boards are well respected and their merging into the state apparatus has been gradual and negotiated. Similarly, the Water Tribunal of Valencia, Spain, which has held customary rules since time immemorial, is respected and enforced (Caponera, 1992; Hodgson, 2004).

High-income countries outside Europe also respect other existing water rights regimes. For Japan, Bruns has noted (2005):

Acceptance of traditional water rights, even when these have not been formally registered, has been a key principle underlying river management in

Japan (Sanbongi, 2001). The law established the principle that existing users have legal standing to protect their interests when necessary. The River Laws of 1896 and 1964 provided a formal basis in state law, through which agencies and courts could take account of existing rights. The principle of being ‘deemed to have obtained permission’ reduces conflicts between state and local law without forcing local rules to explicitly conform to the criteria and formulations of state law.

(Bruns, 2005).

Full respect for non-permit systems, strong users’ entitlements and more centralized authority only after nationwide, inclusive and highly sophisticated formal water economies were developed are in sharp contrast to the origins and development of water laws in Europe’s former colonies.

The Colonial Legacy of Water Law in Latin America and Sub-Saharan Africa

Latin America

According to Roman military tradition, water laws in Europe’s colonies in Latin America and sub-Saharan Africa were primarily designed to overrule prior claims and customary arrangements. Water laws ‘lawfully’ vested ownership to most, if not all, of the conquered areas’ water resources in the colonial minority rulers. Often, permits were imposed as the only formal way to render existing and new water use ‘lawful’. This enabled settlers to obtain rights that were declared formal and hence first-class compared with other water rights regimes. If indigenous inhabitants were allowed at all to apply for permits, they were forced to recognize the legitimate authority of the invaders as the ‘lawful’ new owners of waters that were already theirs. It introduced a divide-and-rule mode of obtaining water rights which only settlers and, at best, a small portion of indigenous people could obtain. It relegated all prior water rights regimes to a second-class status, and also in the cases in which the ‘free’ use of small quantities, so *de minimis* rights, was granted.

The water laws that the Spanish conquerors of Latin America vested were based on the Papal Bull in 1493, by which Pope Alexander VI

gave the catholic kings all newly discovered lands, including waters. Water use became the object of special king's permits (Mercedes) granted by the Spanish government authorities for certain purposes, such as domestic drinking needs and irrigation. Such permits could be revoked. [...] The violation of permit requirements could be punished with a fine.

(Caponera, 1992, p. 49)

A few decades later, the Spanish phrased their encroachment upon prior appropriation claims in a subtler way, aligning with the community-based arrangements that they found alive among the Incas, Aztecs, Mayas and other indigenous water users. The *Leyes de Indias*, promulgated in Spain in 1550, declared for her American colonies that:

Rivers, ports, and public ways belong to all men jointly, so that any person coming from a foreign land may use them in the same way as those living in their vicinity. These common goods were attributed to the Crown and their ownership vested in the Prince as the representative of the community [...] These principles were combined in the Laws of the Indies together with the existing local customs which were not contrary to them. In the indigenous agricultural practice the collective use of land by the clan necessarily implied a collective use of water. Thus the Laws of the Indies accepted the concept that water is a common good which must be distributed within the community for the benefit of its members, but vested its ownership in the Crown, and entrusted its administration to the Spanish authority, considered as the representative of the community.

(Caponera, 1992, p. 49)

By the 19th century, the privatization tendencies of the 1804 Civil Code of France found their way to Latin America. While some countries strengthened private waters, others states kept their declaration of most water resources as being public, but codified such use rights into such strong private rights that the prerogatives assigned were the same or almost the same as those associated with ownership. Caponera indicates how this has 'promoted expansion in water use, in that it offered the user certainty before the law and a freedom of action [...]'. Such a system called for only a very simple administrative organization for the application' (Caponera, 1992, p. 110). Thus, the colonial settlers kept carving out strong formal first-class rights to shared water resources, while

'lawfully' depriving indigenous communities of their prior customary water rights.

As listed above, recent water laws have revived and reinforced this colonial legacy. Chile's Water Code of 1981 is the world's most extreme example in which refurbished concessions offer *certain* users 'certainty before the law and a freedom of action [...], while calling for only a very simple administrative organization for the application', as elaborated below.

In Mexico, the concept of concession was introduced with the Spanish conquest in 1512, which stipulated that ownership of water resources was vested in the Spanish king and that a royal grant was required to use it. However, the factual 'granting' of concessions remained dormant up till 1992. By then only 2000 concessions had been granted (Garduno, 2001). From then onwards, however, the system of concessions was revived nationwide, partly inspired by the Chilean experience (van Koppen, 2007, unpublished).

As documented by Boelens *et al.* (Chapter 6, this volume), indigenous peoples in the Andean region have increasingly contested the revival of this colonial legacy.

Sub-Saharan Africa and the revival of colonial law in Tanzania

When France (and Belgium) colonized Africa, water was originally classified, as in France, as public or private, public waters being those that were 'navigable or floatable' – and vested in the colonial governors. Caponera (1992, p. 99) describes the mindsets of the conquerors in more detail:

Later, due 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. In addition, specialized institutions, government, private or mixed, have been set up to deal with particular water development activities such as domestic and municipal water supplies, power generation and distribution, irrigation and others.

Countries under former British administration have adopted the British system according to which water is *res communis omnium* (common to all), of which the riparian landowners can make use, unless it has been brought under government control through legislation or judicial decisions. Crown land did not generally include water resources, with the result that every specific use of water had to be the object of special legislation. This has produced a large number of legal enactments concerning specific water utilizations. (Caponera, 1992, p. 100)

However, in various colonies the British minority was quick to introduce permit systems, as in Zimbabwe (Derman *et al.*, Chapter 15, this volume) or under certain conditions as in Ghana (Sarpong, undated) and Kenya (Mumma, Chapter 10, this volume). In South Africa, the British land title deed system had vested strong paper titles for whites only on 91% of the territory. By adopting riparian rights throughout the Union of South Africa, most of the water resources were appropriated with a stroke of the pen.

The case of Tanzania illustrates both the history of dispossession and the revival of colonial law under the banner of IWRM. In line with the German colonial tradition before German East Africa was ceded to Britain as Tanganyika in 1919, the Water Ordinance of 1923 required registration to vest water rights. This was open to white settlers only. The Water Ordinance of 1948, Chapter 257, stipulated: 'The entire property in water within the Territory is hereby vested in the Governor, in trust for His Majesty as Administering Authority for Tanganyika.' Under this Ordinance, water uses 'under native law and custom' were recognized but native users could only participate in decision making through 'duly authorized representatives' or 'natives in addition to the District Commissioner'. Customary law was tolerated, but only where it did not conflict with the interests of the colonial state.

In the Water Ordinance of 1959, urban water supply and water use for mining operations were regulated separately. For other uses, obtaining a water licence, permit or right from the colonial water authority was emphasized. The option of registration was extended to native water users, but the status of those who did not comply was left somewhat undeter-

mined. After independence in 1961, the new government under Julius Nyerere shifted ownership to the new state, declaring that 'All water in Tanganyika is vested in the United Republic' under the Water Utilization (Control and Regulation) Act 1974, Section 8. In section 14, registration was rendered obligatory for all who 'divert, dam, store, abstract and use' water. From then onwards, throughout the nation, only registered water use was considered to be lawful. However, the water law remained rather dormant up till the early 1990s (van Koppen *et al.*, 2004).

The dormant laws were revived when a Rapid Water Resources Assessment was carried out by the World Bank and DANIDA (URT/MOW, 1995). This project identified a need for stronger state regulation to better divide what was seen as an inevitably limited pie – ignoring Tanzania's abundant water resources but lack of means to develop them. Especially the 'user pays' principle was promoted, both to create the awareness that was expected to lead to wiser water use and to finance new basin Water Offices. The Staff Appraisal Report of the World Bank report that formulated a River Basin Management project to implement the reform discovered that, ever since the Water Ordinance of 1948, the respective governments had ascribed to themselves the authority to 'prescribe the fees payable in respect of any application or other proceeding under this Ordinance'. But this had never been operationalized. Underlining, in essence, the suitability of a slightly altered colonial water law for modern water management, the report says:

The conceptual framework for integrated river basin management is already laid out in the 1974 Act, as amended in 1981. However, the legislation has never been effectively implemented. The Government has submitted a letter of Water Resources Management Policy outlining measures to be taken to update the legislation and improve management of this resource.

(World Bank, 1996, section 2.13)

Thus, in 1997 and 2002, the government promulgated amendments to the law of 1974 in order to raise water tariffs considerably (URT, 1997, 2002). Besides a once-off registration fee of \$40,³ an annual 'economic water use fee' was introduced. The rate was proportionate to

the annual volume allocated and dependent upon the water use sector, with lower rates for the smaller users. As Tanzania has no exemptions for small users, at least in the current version of the law, the minimum flat rate for an individual or, more often, a group of users was set at \$35, irrespective of the actual flow or volume used. This is more than a monthly income for over half of Tanzanians. According to the World Bank, in Tanzania, 58% of the population live on less than \$1/day (World Bank, 2000).

The water rights registers of the Rufiji basin, with several million water users, illustrate how permits had factually been implemented, primarily by formal and foreign users (Sokile, 2005). By mid-2003 the Rufiji Basin Water Office's database contained 990 water rights. Of these, 14% had been issued between 1955 and 1960 (just before independence) and 29% administered after the establishment of the Rufiji Basin Office in 1993, although these are still largely in the stage of application or have only a provisional status.

Of these rights, 40% were held by governmental agencies, 12% by Brooke Bond Tea Company and 8% by various Catholic dioceses. The remaining 40% of registered users included private irrigation schemes, such as those belonging to Baluchistani and other Asian immigrants who were brought by the British colonialists. As many as 47% of the registered rights, especially the older rights, were 'not operated' anymore, which may reflect the outflow of Germans, Baluchis and Greeks after independence in 1961 and the Arusha Declaration in 1967, which announced further nationalization (for the study of the implementation of the revived water rights system in the Upper Ruaha catchment among customary water users, see van Koppen *et al.*, 2004; Mehari *et al.*, 2006; van Koppen 2007, unpublished; Chapter 14, this volume).

Tanzania and Ghana, mentioned above, are no isolated cases. Other chapters in this volume touch upon similar revival and revision of colonial water laws that have focused on dispossession, towards more widespread application and implementation of permit systems (globally: Meinzen-Dick and Nkonya, Chapter 2, this volume; the Andean regions: Boelens *et al.*, Chapter 6, this volume; other authors on

Kenya, Malawi and Zimbabwe); for Uganda, see Garduno, 2001.

Although further study of the legal revisions and their implications in these and other countries is clearly warranted, some general characteristics of today's permit systems in low- and middle-income countries emerge, and are discussed in the remainder of this chapter. The fifth section discusses the notion of 'property' rights to water in the more abstract sense. The sixth section presents the empirical consequences of such notion of 'property' for the case of Chile. The seventh section builds upon the Chilean case, and also upon evidence from elsewhere, to identify the two key processes that render administration-based permit systems highly discriminatory entitlement systems for informal water users. Again, the obligations dimensions of permits are not discussed here. See van Koppen (2007, unpublished) for the argument that permits can only be vehicles for registration, taxation and waste discharge charges in low- and middle-income countries, if well targeted at the few formalized users and disconnected from entitlement dimensions.

Permits as Property Rights in Low- and Middle-income Countries Today

This section takes a closer look at the nature of this peculiar form of property rights in countries with deep divides between the few administratively knowledgeable large-scale users and many less administratively knowledgeable informal water users. In the light of contemporary notions of justice and fairness, it is odd that a formal property right can be vested primarily through an administrative act. Indeed, a formal property right boils down to the formal legal backing of a user's claim to such a resource, and sometimes to compensation if taken away (Bromley, undated). That is also the core of administrative water rights. However, unlike other objects of property rights, like land, the contents of the rights to water are difficult to define. The physical nature of water as a fugitive, highly variable and unpredictable resource renders any quantification and verification highly problematic. This is certainly the case for under-resourced water departments without measuring devices and with underdeveloped

water control infrastructure. It should be remembered that the inability to quantify was of little concern to the Roman and colonial conquerors, whose primary interest was to establish *whose* water it was in order to establish who could authorize its use, not how much precisely.

For modern states, such formal legal backing remains the primary role. However, even in high-income settings where water is fully controlled physically and institutionally, water laws typically include clauses which stipulate that, in no way, can water rights holders hold the state accountable to make the waters available as stipulated in the rights. Water laws in middle- and low-income countries contain similar clauses. There, any quantification is even more unreliable and inaccurate because of the weak monitoring capacity of water departments and the even greater unpredictability of available water resources in the absence of infrastructure. Average annual volumes stipulated in permits may give some indication of water use and may work as some basis for taxation, but have little to do with factual water quantities and even less with low flows far below any average, when entitlements count most. This renders vesting formal rights to water resources primarily an administrative act in low- and middle-income countries. A permit with formal state backing of the entitlement is a first-class right compared with any claim without such formal backing, which automatically becomes second class when it regards competition for the same resource.

The exemption of domestic and micro-scale water uses, or *de minimis* water uses, from the obligation to register and apply for permits only confirms the inadequacy of a property rights system which defines an administrative act, without much reliability of the contents, as the primary basis for vesting rights. Or, in the words of Hodgson (2004) commenting on *de minimis* rights as a 'curious type of residuary right':

There is no great theoretical justification for exempting such uses from formal water rights regimes. Instead a value judgement 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.

The second-class status of *de minimis* rights is also manifest in the fact that no state has any compensation measure if water for micro-scale uses is taken away. In low-income countries, exemptions for *de minimis* uses relegate the majority of citizens, including the poorest who depend on micro-scale domestic and productive water uses for basic livelihood needs, to having only second-class rights. They are given a status of being negligible and invisible by design for the mere reason – not their own fault – of not being administrable.

As described earlier, this administrative property system is now increasingly imposed to replace indigenous water rights, and reforms are further reaching out into rural areas. Especially in many countries of sub-Saharan Africa, prior water claims are declared as illegal until they undergo an administrative process and are 'converted' or 'regularized' into registrations and permits. Usually, the high costs for registration are with the water user and the period for registration is extremely short. The invariably needed extensions are called 'grace' periods. South Africa is an exception, as it recognizes existing lawful use as continuing to be lawful under the 1998 National Water Act.

Thus, although often unintentionally, contemporary dispossession of prior indigenous and informal water claims, as under colonization, occurs essentially by forcing users to recognize administrative water rights as the first-class titles and denouncing the status and nature of their own, earlier rights. A burden of proof of centuries-old claims is suddenly imposed, assuming that the old claims can be expressed in terms of permits at all. The revised laws and their re-energized implementers seek to finish the unfinished business of colonial dispossession.

Idealistically, it is assumed that everybody will be equally subsumed under the new system and that administrative systems are equitable and fair because 'everybody can apply for a permit'. This ideal of reaching everybody

equally further increases the pressures to register quickly and in an encompassing way. Yet, this ideal is totally unrealistic in low- and middle-income countries with strong differences in administrative adeptness between the few formal users and a majority of informal small-scale users who have hardly any contact with the state, local governments or water departments. Equal treatment is as unlikely today as it has been in the past. Evidence from Chile (in the sixth section) and elsewhere (seventh section) corroborates this and debunks the myth that administration-based permit systems foster justice by treating all citizens, in principle, equally in low- and middle-income countries.

Resource Grab by Design: Evidence from Chile and Elsewhere

The following analysis of Chile is the author's interpretation of the findings of Bauer's in-depth studies on the Chilean Water Code (Bauer, 1997, 1998, 2004), unless indicated otherwise.

The Chilean experience, which has now lasted over 20 years, gives insights in the essence of administrative water entitlements of permit systems. The Water Code of 1981 is an extreme case because it cancelled all earlier restrictions and obligations for users, even the obligation to use the water. In line with the general colonial practice in Latin America sketched above, Chile's Civil Code of 1855 codified that 'administrative concessions' could be obtained to water defined as 'the national property for public use'. Besides these use rights to a public resource, some categories of water use were recognized as private.

With Chile's first Water Code of 1951, some formalization of administrative procedure for granting use-rights started. The law also began encouraging registration of those rights in the local Real Estate Title Offices. The users' rights remained subject to various legal conditions. Rights were tied to landownership and their owners were required to actually use the water within 5 years. The state could revoke without compensation and had well-defined regulatory authority. In the 1960s, state power over water was further enhanced when the socialist government started implementing distributive

land reform and also needed to redistribute water. A new Water Code of 1967 was adopted. This Code reallocated water rights according to new principles, such as plot-size-based crop water requirements of the smaller-sized plots of the 'parceleros' benefiting from the land reform. A new agency, the General Water Directorate, was created to implement this package (Bauer, 1997, 1998, 2004).

Pinochet's military coup of 1973 halted the land reform and introduced Chile's extreme neo-liberal economy, with absolutely minimal state interference. A new constitution was formulated in 1980, which defined water use rights unambiguously as 'private property'. The right encompasses 'the right to alienate the water owned through sale, donation, transfer, inheritance, or to constitute different rights on the same, whatever their nature, at the discretion of the owner'. Not being an 'administrative concession' any more, the state was now also obliged to pay compensation if water was taken away.

Water rights were, for the first time in history, legally separate from landownership and could be freely bought, sold, mortgaged, inherited and transferred like any other real estate. There were no requirements to prevent pollution attached to a water right. Originally, owners had not even the legal obligation to actually use their water rights, and they faced no penalty or cancellation for lack of use. Lawyers realized the peculiarity, unique for water rights, that an individual can have absolute private ownership rights to a public resource. The Chilean legal 'solution' for this contradiction intrinsic to the entitlement dimension of permit systems is that an individual can own a water right but not the water itself, 'since it is only the former that he is free to sell' (Bauer, 2004, p. 141).

These sophisticated definitions of what a 'right' entails in Chile may suggest that the substance is sophisticated as well. This is not the case: water rights are mostly not even registered. Formal property rights to existing uses were based on actual water use in 1981, which somehow has to be proved. The Water Code of 1981 addressed the potential uncertainty of existing claims by declaring a presumption of ownership in favour of those who were using water rights *de facto* at that moment. The high courts confirmed that unregistered rights had full constitutional protection as property, insisting that they are not

lost through failure to be registered. Hence, the large majority of water rights in Chile are not formally registered as they pre-dated the 1981 Water Code, but at least they can be established by proving factual water use.

Rather than being sophisticated and well defined, administrative procedures and registration of water rights opened up a resource grab, both for existing and new water uses. Registration of existing uses without clear measurement and checking by the government as a third party implied that basically any claim held (unless verified by other bodies such as Water User Associations). Not surprisingly, a recent study in the Valley of Codpa showed that individual water rights ranged from 200 to 10,000 m³/ha (Hendriks, 1998).

The possibility of vesting new claims merely through application and registration with the centralized General Water Directorate proved a very easy way to lawfully gain access to water by the expanding foreign mining and irrigated export fruit cultivation under the neo-liberal economy.

Moreover, and most heavily criticized, the option even to claim water without obligation to use led to the hoarding and speculation by a minority of administratively knowledgeable vested powers. The large hydropower companies especially laid massive claims on still uncommitted water resources – anticipating reducing gas supplies from Argentina. After 1990, the newly elected government and the National Water Directorate agreed that this was socially unjust as well as economically undesirable – letting private parties profit from public resources without fulfilling a useful social function in return, and holding back economic development by disallowing others to use the water for productive activities (Bauer, 1997, 1998, 2004).

The Water Code Reform of 2005 introduced licence fees for unused water rights and the limitation of water use rights requests to genuine needs as a deterrent against speculation and hoarding (GWP, 2006). However, as in other low- and middle-income countries, the government lacks the implementation and monitoring capacity to factually check how much water requested in new applications is to be used beneficially.

As widely recognized now within and outside Chile, the expected water market did not come about. Although rights had become

saleable, there were hardly any transfers of water from (registered) willing sellers to (registered) willing buyers. The main transfer that took place was between the government that gave water away for free and speculators who now lawfully demand payment from both government and new users wanting a new water right.

Not even informed about the laws and also otherwise structurally disadvantaged to make use of the laws, informal and indigenous small-scale water users have been most injured by the vesting of water rights through administration. As they were too late to claim their share of the nation's available water resources, access to new water resources has been severely hampered, stifling further water development by them. Moreover, even their existing rights are increasingly under attack. Boelens *et al.* (Chapter 6, this volume) cite the Mapuche leader, bitterly complaining about water originating and used in his areas that has been appropriated by vested powers downstream.

Also, in many other cases, settlements that previously included natural access to water were by now given restricted and irregular access. By the time peasants and their organizations learned of the new procedures, they found that rights to available water had already been granted by the General Water Directorate or regularized by those more legally adept: large farmers, agro-industries and mining and logging companies (Bauer, 2004). Even in a number of government-created programmes to promote small-scale irrigation, subsidies have been denied because of inability to get legal title to unused waters (Maffei and Molina, 1992, cited in Bauer, 1997).

In spite of government support from the 1990s onwards to 'regularize' local rights in the formal property owners' records, the gap has remained. Legal advice and financial support, including considerable expense to repurchase rights on behalf of indigenous groups, still left most of the indigenous claims unanswered. Even specific legislation for minorities' rights was of little avail in the encounters with the powerful Water and Mining Codes (Boelens *et al.*, Chapter 6, this volume).

At the same time existing indigenous water rights, which were formally protected as factual water use in 1981, are increasingly challenged. The business sector keeps promoting registra-

tion by indigenous and peasant communities. According to them, the water rights market and investment in water resources cannot operate if there are local and customary rights that are not registered but do entail a certain legal protection (Boelens *et al.*, 2005). Registration would 'provide a broad catalogue of legal certainties for outside investors in rural areas and indigenous territories'. However, registration for outsiders' 'certainties' imposes heavy and costly burdens of proof, if possible to prove at all, on indigenous users. It traps them further in the recognition of an administrative system that is designed to overrule and erode other legal water rights systems and, as elaborated below, is intrinsically discriminatory vis-à-vis informal small-scale users.

The discriminatory processes at stake are not limited to Chile, but intrinsic to water administration in low- and middle-income countries in Latin America and sub-Saharan Africa in general. Ever since colonization, they have deepened structural inequalities and favoured the powerful at the expense of the less powerful, including informal water users. Today's liberal language that 'everyone can apply for a permit' hides and entrenches these structural inequalities even further. Below, we summarize two sets of generic discriminatory processes when administration is the basis of vesting rights.

Discrimination by Water Administration

Forcing the informal into the formal

The first form of discrimination is, obviously, that permit systems are declared as the superior system and as the norm to which other existing arrangements have somehow to adapt. It is simplistically assumed that customary water rights systems, which are very different legal systems, can be formulated in terms of an administrative right without violating the essence of customary water rights systems. Yet, the differences are substantive. For example, in indigenous water rights regimes, ownership is usually defined as a communal right in contrast to permit systems that vest ownership in the state and permits in individuals and formal entities. Caponera (1992) has also advocated,

fully respecting these essential features in high-, middle- and low-income countries alike: 'In the countries where customary rules exist regarding the ownership of water, such ownership, generally deemed to be community ownership, should be recognized in the legislation' (Caponera, 1992, p. 139).

However, 'recognition' of one legal system in terms of the other system is not easy. Boelens *et al.* (Chapter 6, this volume) discuss the complexities of the politics of recognition in the Andean region. A common option, also adopted in Chile, is vesting permits in collectives. However, this still creates new problems rather than solving existing ones. Typical issues include the definition of 'the community' and the risk of male elite capture that further polarizes internal gender, class and ethnicity hierarchies.

For sub-Saharan Africa, where the proportions of informal rural users are largest, the issue at stake may be as fundamental as changing the norm of which legal system should be the first law. In this regard, the water sector can learn much from the indigenous land tenure debates, where it was found out in the hard and costly way that one cannot simply replace one legal system by another. Ever since independence, governments, development organizations and academics have deployed huge efforts to 'formalize' indigenous land tenure through centralized formal land titling. They have all failed up to the point that now, after five decades, it is recognized in mainstream debates that indigenous land tenure should be recognized as the first and superior law (McAuslan, 2005). The 'received' colonial and statutory formal land laws have a modest role only, which can only take shape gradually and in a problem-based and bottom-up way. While land tenure policies and debates have abandoned centralized titling, the water sector seems to want to reinvent the same wheel all over again by promoting centralized titling through permit systems for a much more complicated natural resource.

For both land and water tenure, 'regularizing' communal systems into individual saleable ownership rights can be highly destructive. These negative impacts should be fully considered when opting for a certain legal system. In Chile, the novel possibility for individuals to sell water rights, which were by now de-territorialized, to

outsiders eroded the precious social capital of communities' collective water-sharing arrangements. The 'soaking off' of water rights from collective and community-controlled frameworks created 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. Indeed, 'the individualization of formerly collective rights and management systems has created internal chaos' (Boelens *et al.*, 2005). In sum, different legal systems are like apples and oranges: one cannot compare them, and it is even less possible to change the one into the other.

Discrimination by administration

Unequal access to information and communication

The second set of processes that lead to differential impacts of administrative water rights concern the working of administration in general. One main reason why the resource grab in Chile by the elite could happen was simply that only very few people were informed about the possibility of registering and obtaining water rights. After the promulgation of the 1981 Water Code, the Chilean government undertook no campaign of public information about the Code's new features, nor did it offer legal or technical advice about how to apply for new rights or regularize older ones. Even if publicity had been better, major gaps in access to 'public' information, or rather timely access in order to be the first to take the share, would have remained.

Those informed and submitting their claims just a couple of years later found that they were already too late. The unequal access to the main information channels and the structural differences in the ability and skills to communicate in the language of the powerful have been amply documented. They include inequalities in: (i) literacy; (ii) access to audio-visual media and written documents; (iii) personal means of communication, like mobiles, internet, post office or bank accounts; (iv) mobility and relative costs of transport; (v) experience with bureaucracy; (vi) distance to state offices; (vii) officials' acquaintances; and (viii) vulnerability to and adeptness for bribery.

Disproportionate costs

A less documented form of structural discrimination is a matter of scale. The transaction costs in applying for permits are disproportionately high for small-scale users compared with those for large-scale users. Both have to undergo largely the same procedures with the exorbitant high costs for the applicant, as in Chile. Costs include presentation of technical antecedents (geographical coordinates, flows, etc.), publication in the official gazette, public registration and lawyers' fees, travel and lodging etc. to arrange this paperwork (Hendriks, 1998). Yet, for small-scale users the profitability of water use is by definition much less than for large-scale users, for whom the application costs are just a tiny proportion of the profits made. Another example of increasing costs for permits that are disproportionate, if not unaffordable for small-scale users in the colonial past, is the obligation to install expensive measuring devices, as imposed by governors in Zimbabwe in the 1950s (Manzungu and Machiridza, 2005). Collective applications mitigate only partially for these disproportionate costs, as they require extensive internal transaction costs as well.

Explicit discriminatory conditions

On top of this implicit discrimination through administration, there may also be conditions attached to permits that discriminate explicitly against small-scale informal users. One common condition for formal permits tied to land is that they apply only to formally titled land. For example, the Kenyan Act of 2002 allocates permits only for titled land that only a small proportion of Kenyans possess (Mumma, Chapter 10, this volume). Such conditions formally exclude all other Kenyans from water titles.

Conflict management and law enforcement

Differential proficiency in conflict management and law enforcement are illustrated in the Chilean case. Even if small-scale informal users in Chile had been able to prove their existing water uses as formally protected by the 1981 Water Code, and even if they had obtained well-recognized and registered formal water rights, they would

have no recourse if such rights were infringed upon. Even state legal advisors cannot do much if large-scale users violate smaller users' rights, for at least two reasons. First, the Code stipulates that decisions on water management are weighted according to actual possession of certain water rights. So rights holders with more water shares (volumetric right per time unit) have stronger decision-making power. This contrasts with indigenous management, where collective interests are negotiated according to the rule of 'one man, one vote'. This minority that possesses the majority of shares, many of whom, moreover, live in the city, has no interest whatsoever in using water more efficiently. They are legally allowed to continue depriving others, even if the latter try hard to increase the efficiency of water distribution and enhance water productivity (Hendriks, 1998).

A second reason for the weak bargaining position in the case of conflicts is that the Water Code reduced all state intervention possible and relegated all conflict management to the regular civil courts. Their judges are powerful, but rarely competent in technical aspects of water rights, and tended to hold a narrow and formalistic concept of law (Bauer, 2004). The costs of their specialist adjudication are high and unaffordable for peasant farmers and out of proportion compared with the limited profits they make with the low volumes of water. Even if small-scale users were to win such court cases, there would be no agency to ensure enforcement (Hendriks, 1998).

Gender

Women as a gender are most excluded. Their legal status in indigenous arrangements is often a second-class status of minor only; their individual resource rights are overruled by men claiming to be the head of the household and therefore deserving control over all household resources towards external parties; their literacy rates are lower and their other forms of access to information and communication are also less than for men; women can even less afford the costs of regularization, let alone formal adjudication for the relatively small quantities of water that they use which, nevertheless, are crucial for basic well-being. In virtually all formal property regimes in the world nowadays, women's

individual titling or joint titling by spouses is debated and gradually taken up in policies and legislation (Lastarria-Cornhiel, 1997). This gender issue is addressed to some extent in Latin America. However, it has been entirely ignored in any debate on permit systems in sub-Saharan Africa up till now.

Thus, for the widely assumed merit of formal water rights systems: 'When formal water rights are secure and tradable [...] they allow for orderly allocation of water resources' (Hodgson, 2004).

Recommendations: Challenging the Colonial Legacy of Dispossession

This chapter attempts to show that permit systems, the favourite in the discourse on IWRM, may function in high-income countries but risk repeating the divestment of rural informal water users from their prior claims to water in Latin America and sub-Saharan Africa. Reviving the strong but still largely ignored legacy of colonial water law, the entitlement dimensions of revised permit systems allow, again, the 'lawful' grab for water resources by the minority of administratively knowledgeable large-scale users. Although the experiences in Chile are exceptional in some senses, the underpinning design of administrative water rights and the processes of discrimination have general validity.

Administrative water rights systems are highly problematic in low- and middle-income countries, first because of the structural social differences between the administratively knowledgeable formal sectors, well acquainted with the state, and those who are not; and, second, because the state lacks the capacity to check and control. This implies that the administratively knowledgeable can lawfully obtain water resources by such measures as: (i) 'regularizing' their existing water uses and claiming higher volumes than actually used; (ii) submitting requests for claims to new water resources as they like, forcing the state without the factual information to allocate whatever is 'still available'; (iii) being legally empowered to treat any other existing water use governed by other regimes than permit systems as second class only, if not illegal; and (iv) intimidating other users with the volumes claimed and asking for

the support of formal lawyers to corroborate their case.

The administratively knowledgeable are faster than others and the first to claim still uncommitted water resources. When the others catch up, they will probably be too late. While losing out to outsiders, communities also lose when administratively knowledgeable individuals within their own communities destroy social capital and create the tragedy of the commons.

To conclude, the following measures are recommended for policy and law in low- and middle-income countries. In countries that are still in the process of redrafting their laws these lessons will be timely.

1. Existing indigenous and informal water rights systems should be recognized and obtain at least equal formal legal status as other legal systems without any burden of proof. From there, adequate forms of written recognition are to be developed.
2. For providing a higher status of entitlements that formally empower informal users, innovative measures are required, e.g. reserved rights doctrine in western USA (Getches, 2005) or General Authorizations that have priority over permits, as currently discussed in South Africa (RSA, 2006).
3. The 'regularization' of existing non-permit systems into permits by the administratively knowledgeable users should be discouraged, as this opens up opportunities for abuse by these users to claim more water than actually used. If applied at all, this should be accompanied by accurate assessments of actual use.
4. Permit systems should, at best, be used as hooks to impose targeted obligations. They need to be well targeted, for example to newcomers only, or as vehicles to impose certain obligations to certain users. In both cases, other legal tools that can achieve the same goal, e.g. registration or taxation, need to be considered as well, as they may appear more effective, requiring considerably leaner administrations.
5. If permits are used as hooks to impose obligations, the entitlement dimensions of the permit need to be removed so that permits are not pursued as an easy way of claiming rights to more water.

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Endnotes

- ¹ The specific context in which tradable water rights have evolved in high-income countries is illustrated by the arid and under-populated states of Australia. Here, strong state intervention with permit systems evolved over more than a century. Neither extended irrigation nor gold mining would have been achieved if the use of water had been limited to riparian land, as the earlier common law from the UK had envisaged. In New South Wales, for example, licences had already existed since 1884, numbering 130,000 today – a number that is manageable with Australia's modern institutions and information technologies. The step to tradability was small. Licences became transferable in the 1980s in response to droughts that made it impossible to put all water licences to productive use. In 1994, all federal states of Australia were committed to engagement in water reform, driven by a nationwide concern for salinization and other environmental problems. In 2000, New South Wales promulgated its Water Management Act. Even in the fully dammed rivers of arid New South Wales, annual precipitation is too variable for secure water delivery. So the security that the state was willing and able to offer as legal backing to its licence holders (and their buyers) was limited, and expressed in an annual volume with the long-term computed probability of availability in any one year. Computations are based on long-term data collection and sophisticated modelling. The more expensive high-security licences have a probability of 99%, while general security licences (for irrigation) are in the 35–70% range. This system is still being perfected, and is now also being extended into proportional rights. Trade is stimulated, among others, through the statewide, internet-based water exchange (<http://www.waterexchange.com.au>). However, permanent trade regarded only 4.5% of the total water rights in 1997–1998, largely because people did not like to leave the already made on-farm investments idle (Haisman, 2005).
- ² The word 'waters' is used here and in many other instances in this chapter following Caponera's (1992) usage.
- ³ In this book, \$ means US\$.

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