

Defining water rights: by prescription or negotiation?

François Molle

Institut de Recherche pour le Développement (IRD), France and Correspondence address: International Water Management Institute IWMI, P.O. Box 2075, Colombo, Sri Lanka. E-mail: f.molle@cgiar.org

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Abstract

Establishing water rights is an appealing measure, which conveys a sense of orderliness and rationality that contrasts with a situation of assumed wastage, environmental degradation and conflicts. Transferable entitlements increase economic efficiency, while providing a compensation mechanism. The paper distinguishes between formal rights defined through a bureaucratic process and flexible allocation rules designed through a gradual and continuous process of negotiation. It investigates the prerequisites, advantages and drawbacks of these two kinds of water rights, and examines how they apply to the specific natural and historical conditions of Sri Lanka. It concludes by showing that policy models must be tailored to the local situation and be based on what is feasible rather than on what is considered desirable.

Keywords: Institutions; Participation; River-basin management; Sri Lanka; Water rights

1. Introduction

Growing competition for water resources is generating conflict between uses and users. Users tend to divert or abstract water, or to degrade its quality, regardless of the impact this tendency may have on other downstream users. The resulting uncertainty in supply, water pollution and shortages hinders investment and has a negative impact on economic efficiency. Many countries, particularly developing countries on which this paper focuses, are engaged in reforming their water sectors. Three important issues feature prominently, albeit with varied emphasis, in most reform proposals: water rights (with the recognition of growing allocative conflicts), service agreements (evidence that water supply is erratic and uncertain) and river-basin management (because of growing upstream–downstream interactions)¹. Because of their straightforwardness and visible adequateness to mitigating the ills of the water sector, these are frequent components of policy reforms.

¹These three issues are not interchangeable but are largely interlinked. In closed basins, the latter is often a prerequisite of the former, or developed in parallel.

The underlying rationale of the establishment of water rights is that a clear definition of who is entitled to use a certain amount of water, with the specification on when and where this is possible, will reduce uncertainty and conflicts (Pradhan & Meinzen-Dick, 2001). In addition, making such entitlements transferable would allow reallocation of rights on the basis of economic efficiency, while providing a compensation mechanism. This is in line with neoclassical economics, which see property rights as a fundamental concept of development, or even as the core of capitalism (De Soto, 2000; Demetz, 1973), and also as a prerequisite to the alleged benefits of markets (Thobani, 1997; Simpson & Ringskog, 1998). Experiences from countries such as Australia, the USA or Chile are presented as a backdrop for such reforms. These proposals make their way through external consultants and are appealing to donors and development agencies because they are legalistic, modernistic, fit their mindset, reproduce the trends observed in developed countries and convey a sense of neatness, orderliness and rationality that contrasts with a situation of assumed wastage, environmental degradation and conflicts.

This paper discusses the establishment of a system of formal rights and first describes the situation most commonly encountered in developing countries. Then it distinguishes, for analytical purposes, between two main approaches to the definition of water rights. A gradual process of rights “construction”, whereby users actively participate in the definition of negotiated seasonal water allotments at different levels, for irrigation schemes up to the basin, is contrasted to the bureaucratic establishment of rights by prescription. These two approaches are compared in terms of equity, efficiency and flexibility, and in terms of requirement for implementation, while the question of transferability is also addressed. The case of Sri Lanka is then taken as an example. The discussion draws on two schools of thought: one that emphasizes the complexity, plurality and the historical embeddedness of legal repertoires (Von Benda-Beckmann *et al.*, 1998; Bruns & Meinzen-Dick, 2000; Meinzen-Dick, 2002) and one that cautions against “institutional monocropping” and the application of blanket- and western-oriented policies, and pleads for contextualized and gradual approaches (Evans, 2002; Molle, 2001; Pigram, 2001; Shah *et al.*, 2001).

2. A common pattern of access to water

Ancient human settlements, developed in locations where a given water source was the basis of the domestic water supply and/or of the irrigation of land on which these settlements relied for their food production, have generally established rules of access to, or ownership of, these water resources. This is typically the case for oases and for many upper-catchment areas where people have established run-of-river irrigation systems. Such systems can be found in almost all mountainous regions of the world, most prominently in the Andes, the Himalayas and southeast Asia.

In large valleys, deltas or, more generally, along rivers of major importance, water rights have often remained either undefined, with a regime of open access to resources, or administered through a more or less informal system of riparian use. Limited demand with regard to supply has generally made legislation unnecessary, as the diversion by one user had little or no impact on other users and conflicts were rare.

Conditions of access to water are shaped by the natural hydrologic regime of each particular basin but, in many cases, the subsequent development of hydraulic infrastructures by the state has

altered the hydrologic regime, leading to the superimposition of a new management logic controlled by the state. Large dams critically modify the flow regime and allow managers to increase supply in the driest periods of the year. Releases are often aimed at providing water to large-scale non-exclusively riparian areas, typically cities and irrigation schemes. The allocation priorities, whether explicit or implicit, adopted by the state partly redefine the pattern of access to water. They do not, however, generally translate into formal rights, because these priorities may change and are seldom defined legally. Indeed, water remains centrally managed and is often effectively reallocated from agriculture to domestic and industrial uses that are given priority (Postel, 1992; Rosegrant & Ringler, 1998).

Such a situation prevails in most developing countries. Emphasis is gradually placed on regulated waters because large storage dams determine the greater part of water supply. However, this often leads to disregarding the interactions that develop within the basin: upper catchments, upstream of the dams, also continue to divert more water and customary rights are challenged by newcomers such as hotels, golf courses or plantations. Changes in land use may have significant implications on runoff, floods and sediment transport and, therefore, on the inflow of dams in terms of quantity, quality and timing. Pollution sources and their impact on downstream areas increase and water volumes needed to dilute pollution and to support ecosystems tend to be disregarded. As users increasingly tap aquifers, the relationship between surface water and underground water use and the necessity to control the latter come into focus (Shah, 2002).

All these evolutions and interrelationships make management of regulated surface water complex and state agencies cannot address these basin issues in isolation. The effective pattern of water use is often quite different from the official or expected pattern because several users or actors within the system may subvert the latter by several means. Owing to the loose definition of rights and the huge difficulty in controlling use along waterways and above aquifers, people may abstract water in an unexpected and/or unauthorized ways. All this seems to call for a greater centralization of management, where upstream–downstream interactions, sectorial tradeoffs and externalities are to be addressed holistically and regulated by appropriate mechanisms.

River Basin Organizations (RBOs) or agencies appear as a “natural” solution; water rights and, whenever possible, their allocation through market mechanisms, bear the promise of raising (aggregate) efficiency. Locally, however, rights are often conceived through legal pluralism frameworks (Bruns & Meinzen-Dick, 2000) and rights defined bureaucratically are likely to conflict with local formulation of rights and equity. Water management at the basin level is thus likely to remain underlain by a tension between gradual decentralized and participatory approaches of decision making and the centralization inherent in the building of holistic planning and RBOs (Miller & Hirsh, 2002).

3. Prescriptive and “constructed” water rights

Against the backdrop of this common situation, where actual allocation rules of regulated water by government agencies coexist with both local rights and a regime of open access along main waterways, the definition of water rights becomes a challenge. Two different approaches are singled out here and their respective advantages and drawbacks are contrasted.

3.1. Two approaches: definitions

A “natural” response of states to resource degradation and allocation conflicts is to enact legislation and establish regulations that embody a logic of control, rationalization and orderliness. The definition of water rights by *prescription* is a process in which the state defines the priorities to be given to different uses, while users are considered as the recipients of this formalization process. Rights are usually defined at the basin level and often distinguish between “bulk users” (such as urban water utilities, large irrigation scales and industries) that are granted an official *license* (or permit) and “small users,” who are granted access to water without a permit. “Small users” typically include people withdrawing water for domestic use, backyard gardens or “livelihood use,” but the definition of “small users” is a contentious issue². These rights may be permanent or granted for a number of years, be conditional upon productive use, or be inalienable. In contrast to land assets, which are static and largely independent, water is a fluctuating resource and rights must embody hydrological variability, a hierarchy of uses with different priorities and an understanding of interactions between uses within the hydrological cycle. The establishment of formal rights features in many proposals or recently passed water-policy bills, but only a few conclusive experiences are available at the moment³.

Another way to conceive the definition of rights is to start from the bottom-end users. Because many local, formal or informal rights pre-exist, it can be more adapted to *construct* rights gradually, through step-by-step *negotiation* between those parties concerned with the management and use of water. In what follows, the rights generated through such a process are designated as *allotments*, to distinguish them from the “rights/licenses” defined in the preceding paragraph.

Processes of negotiation typically occur at several nested levels in a river basin. In the upper catchments, for example, the river flow in some dry years may be insufficient to supply all the run-of-river schemes along the streams and this scarcity often gives way to negotiated rules for sharing water between communities (e.g. Sutawan, 2000), which are under constant redefinition (Shukla *et al.*, 1997). Within irrigation schemes too, users’ participation may be instrumental in the definition of allocation rules in case supply is unable to meet demand. A good example is provided by Brewer (2000), who describes how new allocation rules have been established through an iterative and interactive process among the farmers of the Kirindi Oya irrigation scheme in Sri Lanka. This experience, drawn over three years of water shortage, was punctuated by conflicts and political interventions but resulted in a set of minimal and agreed-upon rules that subsume a degree of customary rights and administrative equity and that allow the variability of water resources to be dealt with.

²The South African law, for example, defines small users as “schedule one water uses” which deal only with water used for reasonable domestic use, livestock other than feedlots, and “small gardening not for commercial purposes.” This distinction is inadequate because there is a large contingent of poor smallholders who do market part of their produce and would therefore not be given rights (van Koppen *et al.*, 2002). The situation is similar in Zimbabwe, where the disjuncture between “primary” water and “productive” water results in silencing the users who come under the first category (Ferguson & Derman, 1999).

³These include Chile, Mexico, South Africa and Tanzania where partial or full-fledged definition of rights has occurred. In developed countries, Australia, the USA and more recently Spain have registered uses and rights that can be traded.

When interactions between users within a basin increase the occurrence of conflicts and third-party impacts, a process of definition of *allotments* can be expanded to the basin level, as in the case of Turkey (Svendsen & Murray-Rust, 2001). While farmers served by the main canals are represented at the scheme level by delegates, users of the different irrigated areas as well as other users and constituencies can have representatives at the basin level. Public agencies act as facilitators: they provide policy and legal frameworks that indicate priorities or standards defined at the national levels, organize quantitative data on hydrology and water use, and assist stakeholders in choosing options that are both technically feasible and not overly inequitable. Water allotments thus represent collective agreements on allocation and, at least initially, do not need to be registered officially and translated into licenses. They are sanctioned by the authority formally vested in the decision-making fora and by the social recognition of these fora, which are conditional upon making them truly democratic and transparent.

3.2. Prerequisites to implementation

As mentioned earlier, water rights remain an abstraction if they are not defined in terms of quantity, timing and even quality. In achieving such a match between what users are supposed to get and what they effectively receive, several general difficulties will have to be faced:

- In some basins, many individual/communal and scattered users will not be easily aggregated in groups to which a bulk right could be attributed, but the abstraction of water by these users could well be of a magnitude that would not allow proper water management if these were to be considered as independent or marginal and left outside the register. In addition, even if their quantitative impact on the resource is limited, these small users are likely to be left out of the picture when rights are addressed at the basin level, as the experience of South Africa suggests (van Koppen *et al.*, 2002). The dilemma is that not registering small users may result in disregarding the problems occurring at the local level (typically in upper catchments, tank-cascade systems or for domestic use in low-flow use, when water quality may get affected), while trying to register them is bound to be a logistical nightmare and is very unlikely to give solutions that will perform better than what can be obtained by local mechanisms of regulation. A case in point is that of Tanzania, where the attempts to register and grant rights to all users in the Rufiji basin have not met with success (van Koppen, 2002).
- Defining quantitative rights requires a very sound knowledge and control of the hydrology of the basin, its water balance and its surface and underground flows. Data collection and processing must not only be of a high standard but also be made transparent and accessible, so that users may make sense of the share of water that they are able to access (Dinar, 1999). Adjusting seasonal entitlements, if need be, and communicating in real time with users so that they may adjust the planning of their activities, are not as simple as they may seem.
- Defining rights also means that there is a political will and a legal capacity to act against those who disregard them, to control new users and limit corruption. In most countries, courts are regarded as inefficient for settling disputes because legal suits are costly, take months or years to deliberate, and decisions are prone to be influenced by powerful stakeholders and are too unpredictable (see Turnia *et al.*, 2000, for the case of Java). In addition, poor stakeholders are generally unaware of their rights, unfamiliar with administrative/legal processes and have an instinctive (and understandable) reluctance to engage in them.

- One of the clearest benefits of defining rights is the implicit control of new users, who may otherwise constantly worsen the supply/demand ratio. However, the task of establishing a register and effectively controlling new users is a daunting one. The (non)-management of aquifers worldwide provides a vivid example of how this is difficult to achieve, although the presence of (fixed) tube wells is probably easier to ascertain than that of mobile pumping stations or illegal diversions.
- The definition of entitlements/allotments implies that the corresponding amount of water can be delivered during a specified period. Depending on the size of the basin and the degree of technical control on flows, this assumption may be optimistic. Uncontrolled water pumping/diversion may affect flows; conveyance and control structures may be manual and rudimentary; low water levels and low head in dams or canals may not allow managers to ensure planned discharges; rainfall and sideflows permanently alter the effective flow at different points in the system; and conjunctive use of water (notably the tapping of aquifers) blurs the assessment of demand and contributes to the deregulating of cropping calendars by allowing farmers to be more flexible (and in particular responsive to actual rainfall), etc. The same problems apply to the entitlements that would be defined at the main canal level within a large-scale irrigation scheme. This problem is sometimes supposed to be solved by setting “service agreements” but this approach often overlooks the technical difficulties of achieving such a service.
- The water available for a given season is typically variable. This hydrological variability is generally dealt with through two mechanisms. The first one is to define priorities, whereby some users have precedence over others in case of water scarcity. A typical example is the definition of senior and junior appropriation rights in the western USA. The second mechanism is to declare that the deficit is “spread” evenly by reducing entitlements/allotments on a proportional basis. This solution is attractive because of its equity flavor but is more easily said than done. Not considering hydrologic variability is a recipe for failure, as the Tanzanian case (and common sense) suggests. In a system where the technical capacity to control volumetric flows over time and space is high, and where the communication between users and system operators is efficient, entitlements can be seasonally defined and water releases fine-tuned to them. Examples of such systems are the Colorado Big-Thompson Project, the Murray-Darling basin in Australia or the Inkomati basin in South Africa. In most cases, however, the level of technical control over fluxes of water and information does not allow easy implementation of such an attractive sharing policy. Proportional division is built in some arrangements as in *warabandi*, or in hydraulic devices such as proportional weirs, but this division is not easy to implement with the regulation facilities usually found in the large irrigation schemes of developing countries. In practice, often, proportional division must be combined with a ranking of priorities, since domestic/urban use is generally considered a priority.

Both rights and allotments face all these difficulties. Prerequisites span technical, administrative, legal and political capacity that may take a long time to build and cannot be expected to be fully established through a bureaucratic process or a new water act, although these steps are likely to be required and need to be carefully designed.

Water rights are decreed by the state and the burden of monitoring and enforcement will mostly be incumbent on it, since the state is seen as the source of legitimacy. Allotments, on the other hand, require a real political commitment to supporting a process of empowerment of users in the

decision making of allocation, at both the scheme and the basin level. This presupposes a gradual process of establishing basin-wide committees or organizations that are backed by the law, are granted clear decision-making powers and constitute a forum where the different stakeholders have an effective say over decisions concerning allocation, particularly with regard to the management of extreme events.

Bureaucracies often oppose such processes and resist the redistribution of roles perceived as a threat to their power and, therefore, tend to favor a definition of rights established under the auspices of the administration. In fact, what has often not been successful—the empowerment of farmers in irrigation management—is required here at the basin level.

In the water-rights approach, RBOs are also needed to define and enforce rights at the basin level, but this is done more with a command and control type of management and the degree of participation is not necessarily very high. In fact, attempts at setting RBOs in various countries have, in general, hardly been successful so far, since they tend to remain dominated by governmental agencies or by powerful stakeholders. Commenting on experiences in South America, Boelens *et al.* (2002) report that “virtual or artificial water management bodies are created, which have no basis in a detailed analysis of local problems or practices, or in the effective involvement of stakeholders.”

Relying on allotments as a process also assumes that the basin stakeholders have enough social capital to produce agreements that are globally sanctioned and accepted by all, even if some may lose in the process. This may not always occur in practice and parties in conflict may well resort to other means to access water, including court suits, political intervention or destruction of infrastructure (see Pradhan and Pradhan, 2000 for an example). However, it is clear that “social capital” is not only a cultural given, but also enabled/disabled by both structural conditions and the degree of local autonomy provided by the state (Evans, 1996; Harriss, 2002).

3.3. *Time frame*

Because politicians, as well as development banks, generally have short-term agendas and want to see the tangible results of the decisions made and of the funds spent, they are tempted to choose the option of “bureaucratic fiat”, which seems easier to control, does not drastically question the respective roles of the state and the civil society and is more likely to be accepted by the concerned bureaucracies. However, the downside of this solution is the price likely to be paid later in terms of conflicts, owing to the possible exclusion of some “small” users, the lack of consideration of the plurality of legal repertoires, the overlooking of the difficulties mentioned above and the specificity of each local setting that will surface through a variety of conflicts and protests.

In contrast, rules defining seasonal allotments are defined in a more dynamic, gradual and trial-and-error manner, and are based on principles that often need several seasons or years to be defined in a way that is both agreeable by all or most users and that is resilient to changing conditions. However, their longer “maturation” period and lower formalization are precisely what give them strength and effectiveness. A gradual approach also allows one to start with simplified proxy measures of allotments (overall satisfaction, maintaining full supply level in a canal, etc.) and progressively to incorporate an improved quantitative knowledge/monitoring of flows. This provides a realistic way of dealing with the “hydrologic misery”. Likewise, it pilot-tests the determination and ability of the state to support real participative negotiation processes. The

risk, however, is that the support and momentum for reform, if any, will be lost if the process lingers on or does not yield visible results.

The question is, somehow, whether problems are critical enough to necessitate urgent top-down remedies or not. Some problems of pollution or allocation conflicts are indeed pressing, but they are most often local and circumscribed and can be tackled locally, with the backing of a legal framework that would reinforce the empowerment of different stakeholders. In all cases, allotments allow users to start from real and concrete problems in search of decentralized solutions, while formal rights are defined in a more abstract and bureaucratic manner.

3.4. Equity

Rights basically defined by the administration are more likely to embody the structure and distribution of power within the society (Boelens *et al.*, 2002). The priorities given often reflect not only economic logic but also the disproportionate weight of industries and cities relative to rural areas and the farming sector. At worst, administrative water rights can make official a very unbalanced pattern of access to water, either because it pre-exists or because the establishment of a register is taken advantage of by people with more power and knowledge. At best, they tend to give way to formal equity, just as engineers tend to promote a “hydraulic equity” in which water allotments are supposed to be proportional to the area irrigated. Imposing formal equity blindly may sometimes backfire if those benefiting from preferential rights and access to resources find their situation radically altered. Often endowed with more prestige, power or social status, they may find themselves threatened and are likely to undermine and subvert attempts to redistribute power.

Because they are defined through mechanisms that are devised by the state in a top-down manner, these rights tend to ignore the *de facto* legal pluralism that pre-exists (and will generally endure) and, in particular, to ignore local or customary rights on which much resource management is often founded. This is a typical situation of tension between, on the one hand, the attempt by the state to rationalize, simplify and apprehend the world and, on the other, the complexity, uncertainty, heterogeneity and dynamic nature of the real world (Scott, 1998; Arce & Long, 2000).

Despite legal frameworks and policies that often claim a concern for the recognition of basic rights, equity and the capacity of the poor to pay for water, the effectiveness of such concerns largely rests upon the government and its bureaucracy.

Allotments, on the contrary, stem from repeated collective interaction between stakeholders and generally embody pre-existing rights, which may however be challenged by different segments of the society, which take advantage of the avenues opened by the new negotiation arena. This is what happened in Kirindi Oya, where *purana* (old) villagers’ rights were both recognized and curtailed, to the benefit of new settlers. In other words, allotments may depart from formal equity but by implicitly incorporating historical or social differences that are recognized and socially sanctioned by local groups they tend to receive much wider acceptance and are likely to be more stable. Endogenous negotiations, however, do not ensure that the outcome is fair (since rural communities are not necessarily equitable) and the role of the state, or of other outsiders (such as NGOs), is often crucial in ensuring that acceptable compromises are found or that the interest of the poorest sections of the population is taken into consideration (Nelson & Wright, 1995; see Potkanski & Adams, 1998, for an example in Tanzania).

More generally, whether the definition of allotments will be equitable will depend greatly upon the degree of democracy in the decision-making process, on how representative are the different stakeholders and of the information made available (in particular on hydrology). Of course, since all claims for water are unlikely to be met fully, viewpoints and values rarely commensurable and consensus is hard to achieve. There are unavoidable tradeoffs between protecting all individual rights and elite decision making (Schlager & Blomquist, 2000). Equity can be considered to have been achieved if a compromise is reached through a negotiation between all stakeholders, informed by relevant and transparent data.

3.5. *Flexibility*

The flexibility of rights refers here to their ability to deal with changing conditions in the status of water resources. These conditions can be typically intra- or inter-seasonal (fluctuating availability of water) or vary over a longer time period (hydrological change). In situations where the available water varies little, it will be easier to allocate rights close (but inferior) to an average value, leaving a few years with shortage to be dealt with through moderate reduction of allocations (by quotas or other means). On the other hand, if the amount of available water varies widely, managers are left with two options. First, they may allocate rights close to the average but will then have to establish a significant reduction of these rights frequently (in many years). Second, they may also choose to allocate a more “stable” and lower portion of the average value, thus reducing the frequency of the occurrence of years when adjustment will be needed, but will by the same token leave a large part of the resources unallocated in average (and excess) years, fostering unofficial appropriation of water. It follows that the difficulty arising from the need to reduce nominal rights will depend on the variability of the water available and on how much of the average value is allocated. Thus, contexts where rainfall and/or runoff tend to be irregular pose more problems. It is no surprise that a natural tendency in the allocation of rights is to minimize conflicts and discontent by over-allocating resources, as has occurred in Australia (MDBMC, 1995) and in Kenya (Huggins, 2002) with cases where permits added up to more than the average flow of the river, or in Zimbabwe where this resulted in rights with over an 80% chance of failure (Jaspers, 2001).

By their own nature, allotments offer more realistic decentralized solutions that need not be defined in advance and are, on the contrary, defined through an endogenous process. Another dimension of flexibility is the capacity to integrate long-term changes in social goals or in basin hydrology and water availability. The alteration of the hydrology (drying up of springs, decline of river base flow, changes in sediment or water quality, etc.) by land use changes in upper catchments or groundwater abstraction are good examples of changes that may call for a renegotiation of shares. This does not mean, however, that allotments are exposed to permanent contestation. Levels of priority defined by law and endorsed at the basin level should provide certain users with more security. Domestic and industrial uses will be made secure and negotiations can take place whenever a deadlock is experienced. As for water rights, a degree of flexibility can be accommodated by making them periodically revisable, rather than defining them as immutable. Security can be granted by limiting the degree of alteration, as in New South Wales, Australia, where adjustments can be made within 10% of the existing right (Bruns, 2003).

It must be noted, however, that even with a successful definition of rights, the farming sector will cope with most of the fluctuating nature of water supply. As other uses, particularly in cities

and industries, generally receive higher priority and are somewhat “incompressible”, the reduction by proportional share in case of low supply will predominantly affect farmers. In other words, they will not hold “senior rights” and in basins with water shortages, where all pre-existing users are likely to be registered, their access to water will remain highly variable.

3.6. *Enforcement*

Water rights/allotments are meaningless without a way to enforce the “exclusion right”, vested in the state, the RBO or a local community (Schlager & Ostrom, 1992). In larger systems, this typically involves controlling “ghost pipes”, siphons and pumps diverting water to non-command or unauthorized areas. At the basin level, pumping stations and diversion weirs may multiply and even state-run schemes may abstract more water than allowed. In the Chao Phraya basin (Thailand), for example, the proportion of dam releases diverted in the dry season between the dams and the delta has moved from 5% to up to 35% in a decade. This diversion is largely uncontrolled, even though it includes flow to some official irrigation schemes (Molle *et al.*, 2001).

Because allotments are devised with the active participation of the users concerned, these are more keenly aware of how the share apportioned to them relates to the overall water available and of who is entitled to divert water. Therefore, they are encouraged to monitor the arrangements by themselves (by patrolling canals and structures and monitoring quantitative measurements of flows) and more willing to activate means of enforcement at the basin level (by reporting misconducts and demanding action). Water rights, on the other hand, tend to be perceived as part of government control, encouraging free riding, selfish behavior and corruption of officials, rather than adherence to rules.

3.7. *Cost recovery*

An underlying driving force of the policy of formalization of rights is the question of the financing of water administrations. Quantification of allocation allows the state to estimate the benefit accruing to the different users and provides a basis for taxation. A financial squeeze has been a major driver of the reforms in Mexico. In Zimbabwe (Jaspers, 2001), Tanzania or South Africa (van Koppen, 2003), it is apparent that taxing the big users is also a chief objective. Because they symbolize more fully a formal right and strengthen the justification for a payment, rights might be preferred to allotments when financing issues are on top of the agenda. However, because allotments enhance their sense of ownership, users might be more inclined to pay for what they have vied for.

3.8. *Transferability*

Water rights need not be transferable. However, transferability appears to be attractive because it holds the promise (a) to allow users with a higher water productivity to procure water from low-productivity uses while, at the same time (b) to provide financial compensation for those who agree to sell their rights. These arguments in favor of water markets are often put forward as a possibility of achieving win–win situations (Schiller & Fowler, 1999; Thobani, 1997). In practice, economic efficiency and equity, or fairness, are often antagonistic and this is generally treated as a “technical” tradeoff.

Although this paper is not intended to address the large debate on water markets, the argument stressing the potential economic gains of (re)-allocation deserves a comment. Markets are proposed as an alternative to a central bureaucratic allocation widely held as economically inefficient. Observations in developing countries seem to contradict this assumption: because of the higher productivity of water in non-agricultural uses (as well as for other reasons like the respective political clout of economic sectors), agricultural/non-agricultural transfers seem to be the rule (Postel, 1992); and cities *do* grow and water *does* get transferred to urban activities and industries through bureaucratic decision, in line with what economic logic dictates⁴. One of the rare cases⁵ where non-agricultural activities are critically constrained by the difficulty of ensuring such a transfer is that of the western USA, where the prior appropriation doctrine has long resulted in the locking up of the available water in irrigation districts and other agricultural uses, entailing drastic constraints on the reallocation of water to thirsty towns (Frederik 1998; Huffaker *et al.*, 2000). Rather than “voluntarily” relinquishing or selling their rights, it seems that rights-holders as well as local communities strongly resist transfers, partly because alternatives to farming are often not available (Frederik, 1998; Wahl, 1993). Even if cities do succeed in capturing some agricultural rights by buying land to which they are attached, the Zimbabwean case also shows that domestic priority to domestic water could not force large farms to cede some of their rights.

While acknowledging that reallocation may not be such a crucial issue and that rights may eventually hinder it, the financial compensation attached to market-based transfers remains as a powerful advantage of formal water rights over a mere administrative allocation that leads to stripping certain users of the water they were used to use. Transfers of rights, however, can also be mediated by the state, which may select new users according to the priorities defined by law when water is made available, and arrange the payment of a financial compensation determined officially (similar to the mechanism of the California drought bank but applied to permanent rights). Allotments, on the other hand, implicitly give rise to transfers when shares are renegotiated, but this reallocation is not driven by economic power only, as particular values and interests are allowed to express themselves in the negotiation process.

4. The case of Sri Lanka

Sri Lanka provides a good example of a country where traditional rights, particularly those attached to small tanks and *anicuts* (river-diversion weirs), coexist with an open access regime

⁴It is not clear what the Asian Development Bank's (2000) statement: “allocation *frequently* becomes locked, however, into what are clearly low-return uses (e.g., irrigation), when new projects are required to meet priority high-return needs (e.g. cities and industries) (emphasis added)” refers to, since with notable exceptions like that of the western US, the opposite is undoubtedly more *frequent*.

⁵A similar situation exists in Southern Africa (Jaspers, 2001). The similarity between the two situations suggests that water rights based on prior appropriation are typical of situations of frontier colonization and settlement, and engender the same deadlocks. In Zimbabwe, for example, earlier water allocation under the Rhodesian Water Act to large white farmers had prevented communities and peasant farmers from satisfying their basic needs (Jaspers, 2001). Whether it is economic efficiency or human rights that are constrained, this provides instructive examples of how water rights can be counterproductive when they are not subject to periodic public renegotiation within a social choice framework, which is what the recent water-sector reforms aimed at providing.

along main waterways, and with the allocation of regulated water by the state (Irrigation Department and the Mahaweli Authority of Sri Lanka). Over the last decade, several initiatives for reforming the water sector have been launched. More recently, the Asian Development Bank (ADB) has supported the formulation of a water policy framework aimed at the enactment of a Water Act scheduled for 2003, but that suffered from further delay. First, two dimensions of the policy reform, its soundness with regard to local conditions and the formulation process, are briefly examined here. The feasibility of rights by negotiation is then briefly addressed.

The latest drafts of the water policy⁶ and of the Water Resources Act drawn up for Sri Lanka (WRS, 2002), propose a reform whose inspiration is akin (albeit not fully) to the prescription of formal rights and exemplifies well the issues addressed above. It envisions water *rights*⁷ granted to existing bulk water users within a basin or aquifer, [which] “will contain terms and conditions regarding water abstractions, including such things as the purpose of water use, the volume, rate and source and point of abstraction. They may also define dates or minimum stream flow conditions for abstraction, return flow, water conservation requirements and other matters regarding abstraction and use”. This statement conveys an orderly and “tidy” vision of water management, where all users eventually receive, with the right timing, the quantity of water stipulated in the registers.

While the proposal features nicely on paper and is attractive at an abstract level, it is to be feared that few, if any, of the prerequisites listed earlier are met in practice. The hydrological knowledge of basins (particularly groundwater) and data management systems are generally insufficient; the existence of a technical capacity to regulate flows and ensure scheduling and service agreements is doubtful in the face of actual management performance; the prospect of establishing registers of users, monitoring their actual use and enforcing law and penalties⁸, is also at least optimistic when one looks at other issues for which legislation has been already passed but has largely remained a dead letter (e.g. pollution control, environment preservation; see Fernando, 1993); the capacity of the different administrations to work together at the basin level is still incipient; the bureaucratic (in particular in the Ministry of Irrigation) and political support of a process of administrative reorganization with new players at the country level (apex body for water policy) and basin level (RBOs) is still not evident.

With regard to flexibility, the policy document states that “allocated quantities will be subject to variation on a proportional basis depending on the availability of water in the river/stream or common water body at a given point of time through a real time planning process”, but this crucial problem cannot be glossed over so easily. Again, this presupposes a high level of control of flows and of monitoring of uses, which will be difficult to achieve in most basins.

⁶This draft is the 17th of a series initiated in 1984. Two abridged versions (less than 10 pages each) of this document were issued by WRS in 2002 but the earlier version is considered here since it is far more detailed. The draft Act is the sixth version (December 2002).

⁷Defined by the granting of permits. “Livelihood water users,” including all irrigators under tanks, *anicuts* or public schemes, do not need permits.

⁸For example, the Pellawatte sugar factory, in the Menik Ganga basin, has been officially allocated use of 25 cusecs but is allegedly using up to 100–200 cusecs. Jinapala *et al.* (2001) have found 2,334 mobile pumps operating along the Deduru Oya river. In times of drought, this number is probably higher and pumps have a significant impact on low flows. Without provision to control water use, basin management will remain ineffective.

Water rights are meant to be transferable. This question has raised considerable opposition from NGOs, which fear that this possibility might lead to spoliation or concentration of rights and that, in particular, transnational companies might enter the sector (Withanage, 2001). The lack of details regarding how these transfers will be effectively implemented⁹ shows that in the context of a political economy where the transparency and accountability of the administration towards citizens are limited and where individuals have poor access to legal means of defense, such a proposition is deemed to be uncertain and controversial¹⁰. Similarly, as noted by Gunatilake & Gopalakrishnan (2002), the way the initial distribution of rights will be achieved is left unclear. There is a sense that all existing users will be able to acquire permits, which implicitly assumes that no river basin is overcommitted, while new applicants will be considered based on a set of preconditions. The critical question of how actual uses are (quantitatively) defined and transformed into rights is left unanswered. In addition, “freezing” current uses, probably the easiest and less-conflicting option, will also freeze existing inequities or imbalances in supply/demand.

The draft version of the Water Act states that the size and composition of RBOs’ membership are to be determined “in consultation with NWRA [National Water Resource Authority] with due consideration to: the effective participation of water users, relevant government departments, statutory bodies, and provincial, district and divisional secretariats and local authorities in addressing water resources issues through the preparation of the plan”. This leaves doubt about whether imbalance in favor of local government representatives and line agencies can be avoided.¹¹ Such imbalance can be observed in most countries, for example in Thailand (Molle, 2003), South Africa (van Koppen *et al.*, 2002) and South America (Boelens *et al.*, 2002).

Several other difficulties emerge when we look at the specificity of water management in Sri Lanka. What are the consequences of not including the tens of thousands of tanks and *anicut* systems in the register? How do we take into consideration the complexity resulting from the many trans-basin diversions, a technique that has been mastered and used extensively in Sri Lanka from at least as early as the fifth century? How, in particular, do we factor into the forthcoming RBOs the overriding importance of water redistribution operated in the Mahaweli system across several major basins?

Of interest here is also the process of institutional change at work in the formulation of the policy reform. Is what is at stake only a redistribution of administrative power or, more widely, a redefinition of relationships between the state and the civil society? Is the proposal induced by a gridlock that demands sweeping reforms? Is it, on the contrary, or in addition, pushed by outsiders?

⁹The Act stipulates that transfer to another person is subject to the approval of the authority, which must, in particular, verify that the transfer has no third party impact. It opens the way to a degree of trading.

¹⁰Oddly enough, those who *trust* the capacity of the state to defend rights are often those who favor market mechanisms and the downsizing of state role based on criticism of its *inefficiency*. However, the societal reasons for which the government agencies perform poorly are exactly the same reasons why privatization or markets are equally unlikely to be fully successful and equitable: the lack of transparency and accountability, the excessive weight of economic interests in political life and the lack of barriers to regulate their practices, corruption, etc.

¹¹During a workshop on water policy in Sri Lanka, an official of the National Water Supply and Drainage Board leading the pilot RBO in the Menik Ganga basin declared that no NGOs were selected “because they are not aware of the present situation”, while the administration was reported “to show good interest”.

There is little opposition to the recognition that the situation regarding water use in some basins is (locally) serious enough to demand the crafting of new institutions. But if these problems illustrate the inadequacy of current management practices they also show the weakness of the state in enforcing regulations and representing the interest of all parties, notably the environment. In a context described by social scientists as one of a weak state (Dunham & Kelegama, 1997), overly ambitious reforms are likely to prompt a situation similar to that observed in Zimbabwe, where it became “painstakingly apparent that it takes more than good legislation to guarantee a change for the better” (Jaspers, 2001). Therefore, one may wonder whether a solution that relies precisely on a stronger state regulation and administrative reshuffle is likely to bear the fruits that are envisioned. If we accept that a more decentralized and endogenous process is necessary to arrive at more stable solutions, then both the rather short-term agendas of development banks and the legalistic bureaucratic approach they foster seem inappropriate.

Whether external pressure or incentive is beneficial to local institutional change is debatable and variable but, to many, the water sector appears to be largely dotted with well-intentioned and rationalistic reforms for which the context of their implementation has not been fully appraised (Sampath, 1992; Molle, 2001; Pigram, 2001; Shah *et al.*, 2001)¹². The failed attempt to establish water charges in the late 1980s seems to provide a good and warning example of what Pigram (2001) sees as ill-conceived translations to the third world of the experience of the developed-world in water and environment management, particularly with regard to the “application of economic instruments to the allocation and use of water”. Existing legal and institutional frameworks are not apt to integrate reforms that have severe technical, managerial, administrative, political, institutional and far-reaching prerequisites that have not been sufficiently recognized (Molle, 2003).

The current dominant feeling among Sri Lankan officials involved in the debate about the water-sector reform is that they are squeezed between going ahead with a proposal that owes too much to foreign consultants’ world view and is increasingly seen as inadequate, and reworking a document under both internal and external pressure to meet deadlines and incorporate certain principles. This might lead to a woolly compromising Water Act, whereby contentious issues will have been watered down or cut off. As reported about the Vietnamese case (Malano *et al.*, 1999), general principles will remain stated, with few details on the modalities of their application. This will meet development banks’ conditions for further funding in the water sector, while possibly deferring concrete action for an indeterminate period of time.

Is the allotment approach, then, more appropriate to Sri Lanka? The answer to that question is likely to be complex. On the one hand, the negotiation of allotments puts the onus on the state to allow a genuine empowerment of stakeholders at both the irrigation scheme and basin levels. While this is difficult to achieve overnight, it may nevertheless be possible to ensure that this happens in the basins where the approach would be first tested, by allocating adequate human resources and strengthening the management information system. At the irrigation-system level, it may be possible to capitalize on and strengthen the *kanna* meetings, instituted in the late 1950s,

¹²There has been, recently, a flourishing literature on the conditions and possibility of transferring the Australian experience to other regions of the world, notably to the Mekong River basin and Sri Lanka. These include Pigram (1999, 2001), Malano *et al.* (1999) and Birch *et al.* (1999), who see “international mentoring” and its application to Sri Lanka as promising.

where farmers and managers are supposed to plan the coming season jointly. Although in practice many of these meetings remain largely consultative and have a varied bearing on the allocation and operation of irrigation schemes, they may in some instances give way to the definition of allotments, as in the Kirindi Oya case mentioned earlier.

An important observation must be added here; we do not suggest that farmers' participation should be built starting from the tertiary level and then moving up to upper levels. This approach has failed repeatedly because of the uncertainty of the flow to lower level areas, which has remained beyond users' control and has undermined all organizational efforts at these levels. Rather, users must be first fully involved at the upper levels, where water sharing and scheduling are defined (typically at the scheme and main canal levels). It is only after a predictable supply to secondary canals is ensured that negotiations on how to share this water can take place within sub-areas¹³.

In sum, the challenge is to set up a policy and legal framework that favors the establishment of democratic processes of negotiations around basin-wide water-related problems, commencing with basins where conflicts are most severe¹⁴. Basin-wide negotiations must allow enough time for data to be assembled, for stakeholders' rights and needs to be identified and fairly represented, and for them to understand the particular hydrology of the basin and to be aware of constraints and options¹⁵. As underlined by Meinzen-Dick (2002), despite the growing importance of water rights, "rushing to establish or reform water rights without first understanding what already exists may create more problems than it solves". Multi-level arrangements on allocation must be defined under supervision of the state (through the RBO), in order to make sure that priority of use, including domestic use and environmental services and the security necessary for large investments are taken into consideration. In a later phase, these technically tested and socially accepted arrangements may serve as a basis for a more formal definition of rights.

5. Pragmatic avenues

While the two approaches described earlier have been contrasted for analytical purposes, the reader will have nevertheless recognized that solutions are not necessarily restricted to such a polarized alternative. Actually, as suggested above for the case of Sri Lanka, it is clear that participatory negotiation processes need to be embedded in a supportive legal/institutional framework, preferably including RBOs, assuming that they are given decisional power that goes beyond a mere consultative role. Conversely, a bureaucratic process of definition of water rights cannot be fully insulated from local realities and is likely to elicit wide rejection should this be the

¹³State intervention is paramount in the "scaling-up" of local organizations, rather than at the users' group level, where social capital can be mobilized/generated if there are clear incentives for collective action (Evans, 1996). Bottom-up approaches remain invariably stuck at the lowest level, no participation being effectively allowed at higher levels of decision-making.

¹⁴The policy document does recognize the necessity of a gradual implementation, with "problem basins" being addressed first. See also Birch *et al.* (1999).

¹⁵The Interstate Commission on the Potomac River Basin provides a good example of an agency with little formal authority, yet with an influential convening power due to its ability to jointly create data and models of the river and to build over time a sense of trust in monitoring, then suggesting actions in light of actual on the ground conditions.

case. Experience suggests that reforms that are overambitious on paper or overly state-controlled encounter real-world difficulties. They soon resemble a trial-and-error process and their time frame is drastically lengthened.

Altogether, while the reshuffle of the administrative structure, the establishment of RBOs and the formulation of legible allocation rules are general and, by and large, consensual principles that must be clearly enshrined in the law, it is in the modalities of implementation that the ‘devil lies’: time frames; allocation priorities; degree of environmental awareness/regulation; data requirements; modes of representation, participation and consensus building; role of the state and accountability mechanisms; incentive structures, etc.

The dichotomy adopted earlier is therefore useful to remind us that legitimacy is enhanced by genuine participation, whereby stakeholders appropriate the process and its outcome, rather than by a legalistic drive¹⁶. It also warns us that even when participation is heralded as a central component of policies¹⁷, reforms have a “natural” tendency to drift towards the bureaucratic type defined above, as participation often remains limited, if not cosmetic, in practice. Instead of presuming that the water-society relationships are malleable enough to be forced into a bureaucratically defined process, it might be more realistic to acknowledge from the onset the limits of the state’s control and ability to address the multifarious complexity of local settings. Attempting to “put the allocation right” by multi-level negotiations before further formalization is thus a reasonable first step allowing testing of, among other things, the existing level of political commitment, the ability/willingness of the state to back stakeholder-driven negotiations, the relevance of existing hydrological data, and the technical capacity to ensure that effective supply resembles rights as they are defined. A failure to give due consideration to these issues may confirm Elinor Ostrom’s (2000) warning that “the worst of all worlds may be one where external authorities impose rules but are only able to achieve weak monitoring and sanctioning”.

The common overemphasis on state power can be seen as typical of “the widely shared opinion that ‘substantial’ or ‘adequate’ development depends critically upon intervention, in other words, on the introduction of packages consisting of various mixtures of expertise, capital, technology and effective modes of organization” (Long & van der Ploeg, 1989). This can be explained by the pervasiveness of conceiving modernization/development as bringing in “missing” expert knowledge (Arce & Long, 2000) rather than by eliciting endogenous and negotiated solutions. In contrast to the homogenous, coherent and rational process depicted by planners, development intervention is a heterogeneous and discontinuous social construction, based on a continual negotiation of diverging meanings and interests (Long, 1989). A policy centered on the recognition that policymaking is a trial-and-error process, however, is unlikely to be attractive to bureaucratic elites and donors, as it would undermine both their self-confidence in their power to shape the real world according to rationalistic objectives, and the belief of outsiders in their capacity to do so. However, as Boelens *et al.* (2002) put it, “it is an instrumental myth to assume that the intended changes in water management can be made only by formulating and legislating official rules”.

¹⁶Boelens & Doornbos (2001) emphasize that “to strengthen local normative systems in peasant irrigation, it is not necessary to back or legitimize specific rules, but rather to enhance the authority to make such rules, involving all stakeholders”.

¹⁷This may even not be the case. The Vietnamese Law on Water Resources (Government of Vietnam, 1998), for example, contains 71 occurrences of the word “state”, compared with none for “participation” or “participatory”.

In sum, crafting allocative mechanisms that are fair, resilient and sensitive to local reality needs a political and legal enabling environment but must also be based on a conception of water delivery as “co-production” (see Ostrom, 1996), whereby users participate in the production of public goods, as opposed to a “service” approach. Having users involved in the upper levels creates accountability and makes them aware of management constraints, existing inequities and actual available resources. This potentially contributes to shifting their role from “selfish complainers” to co-managers of the whole system.

6. Conclusions

In most developing countries, customary rights to water coexist with an effective open access regime along main waterways, while the development of hydraulic infrastructures managed by the state alters the hydrologic regime and redefines the allocation of resources. Increasing pressure on water resources has critical implications for how water, seen in terms of quantity, quality and timing, is distributed and shared at the basin level. Couched in the idiom of modernism, economic efficiency and fairness, the definition of water rights often appears to be a self-evident and desirable measure that has the potential to remedy the problems of the water sector. This raises questions about how these new rights are defined (and in particular about what the respective roles of the state and other stakeholders are). Two approaches have been reviewed and contrasted: the definition of rights by bureaucratic prescription and the generation of rights through gradual bottom-up negotiation processes.

Both options have been shown to embody implicit and optimistic assumptions about technical capacity (knowledge of hydrology, quantitative definition and monitoring of water use, service agreements, etc.), in particular with regard to the necessity to address fluctuations in supply and curtail rights accordingly. With the legitimacy of formal rights vested in the state, the need for registration/control of users as well as for the enforcement of regulations places a heavy burden on the administration and judicial system.

While water rights may be established faster, they are likely to overlook the local complexity of customary rights, to be less stable (more subject to contestation) and to give too little consideration to (the volumetrically marginal) uses of water for subsistence and domestic purposes. Water allotments are defined by a gradual negotiation process that recognizes the slow maturation of institutional building, are technically tested and socially sanctioned, and are prone to redefinition when circumstances demand it. However, defining allotments also assumes that the state will engage in a genuine and sweeping process of empowerment of water users, which may be optimistic in view of the limited progress achieved in having users participate in water management. The reform in Sri Lanka has illustrated how emphasis can be put on the definition of formal and transferable water rights, while many of the technical, administrative, legal and political prerequisites to such measures cannot realistically be said to be in place. Allowing for the negotiated definition of allotments at irrigation scheme and basin levels, starting in a few situations where conflicts are more severe, seems to be a more pragmatic option.

Regardless of whether they emphasize legal, technical or organizational aspects, proposals for establishing water rights, service agreements or RBOs tend to overemphasize the role and ability of the state to enforce laws that would reorder the use and allocation of water and eliminate

conflicts. They overlook the fact that basin-level water-management needs more sophisticated and mature governance frameworks¹⁸. They also tend to reflect the rationalistic world vision of foreign consultants rather than paving the way for the emergence of endogenous processes of trials and errors towards locally suitable solutions and their further combination at the basin level. As Thomas & Grindle (1990) have observed, “reforms have been attempted when the administrative or political resources to implement them did not exist. The result has generally been misallocated resources, wasted political capital, and frustration”. Here, again, it is doubtful that there exist sustainable shortcuts or “leapfrogging” to the design of new societal arrangements for the management and sharing of water resources.

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¹⁸As noted by Pitman (2002), “integrated water resource management by river basin organizations is difficult to set up. To be effective, it requires sophisticated institutions and good governance—things lacking among most of the Bank’s borrowers”.

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