

Managing the Business: Potential and Pitfalls of Water Rights and Water Tariffs in Allocating and Managing Water in Water Stressed Basins: The Case of Rufiji Basin in Tanzania

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Abstract

Most countries in Sub-Saharan Africa have embarked on integrated water resources management. As part of these reforms in the water sector, many governments are considering and others have already implemented the legal tool of water rights allocation and have linked the same to water tariffs. This paper analyzes formal and factual payment-linked water right systems in the agrarian economies of Sub-Saharan Africa. The formal water management tools, as formulated in the water policies and laws are analyzed and compared with the early experiences of implementation and impacts on the ground, in particular in Tanzania. The paper further examines whether in reality the original objectives of the water rights and water tariffs are attained or not; the potentials of the water rights and water tariffs, and the present and possible pitfalls of the same. The paper also identifies the problems that are encountered in the administration and the enforcement of these tools. Finally the paper draws the generic conclusions, highlighting the conditions in Sub-Saharan Africa under which the managerial aims of payment-related water right systems can be reached, but also the conditions under which the tool creates new problems without solving existing problems, and thus should be thoroughly revisited.

Key words: Sub Saharan Africa, Tanzania, Water Stressed Basins, Water rights, water fees, water charges, water pricing, water conflicts, farmer-managed irrigation

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1. Introduction

Aim of the paper

Most countries in the Sub Saharan Africa have been reviewing water policies, laws and legislations and management strategies in the past two decades. The increased water uses due to increased population and improved technologies necessitated reviews. Tanzania, South Africa and Zimbabwe have been in the forefront of these changes. This paper focuses on such changes, in particular on the case of new water rights system tied to water charges in the Rufiji Basin in Tanzania. The paper argues that the water rights system that has been operational since the colonial era in Tanzania has recently been tied to the introduction of water charges with a completely new purpose. It is expected that charging for water would both induce wise use of water as an economic good and enable partial financing of governmental water resources management institutions. However, field evidence of the early implementation of the new system shows that these expectations are not met at all. Although popular and widely outspoken as a water management tool, managing water rights is quite a challenge in Sub Saharan Africa. Unlike the few developed countries in the world where water rights have been introduced, such as the USA and Australia, Africa is characterised by many poor smallholders who are widely scattered and use very poorly developed (local) structures to draw water. In such a set up, it is not easy to ascertain what quantity of water is exactly drawn, or to predict the quantities in future seasons.

The paper starts by describing the background of the study area and the methodology employed by the study, and then focuses on the inherent management challenges of water rights cum taxation system with a specific attention on its potentials and pitfalls. Finally, the paper identifies the management gap and proposes a way forward.

Description of the study area

The Rufiji basin is the largest of the nine river basins in Tanzania, draining a total area of about 177,000 km² (URT, 1995). It consists of several river systems, the largest and most important of which is the Great Ruaha River (GRR) system. The Great Ruaha River is draining an area of about 68,000 km² (see figure 1) The Great Ruaha River originates from a number of large and small streams at the northern slopes of the Poroto and Kipengere mountains in the Southern Highlands between Mbeya and Iringa. It flows to the Usangu plain where several other rivers flowing from the highlands join it; namely Mbarali, Kimani and Chimala whereas the small ones include Umrobo, Mkoji, Lunwa, Mlomboji, Ipatagwa, Mambi and Mswiswi rivers.

During the rainy season, the Great Ruaha River spills onto the Usangu plains, forming the Usangu wetlands (Western-*Utengule* and Eastern) and feeding a perennial swamp (*Ihefu*) within the Eastern wetland. It then flows through Ng'iriama (an exit to the Eastern Wetland) on to the Ruaha National Park providing the main water source to the park and to the Mtera dam, which is the main electricity generating source in Tanzania (accounting for 56% of the runoff to Mtera dam). As it flows down, it is joined by Little Ruaha River before being joined by the Kisigo River. It then passes through the Mtera reservoir, before flowing westward to the Kidatu reservoir, being joined on the way by the Lukosi and Yovi rivers. From the Kidatu reservoir then it flows into Kilombero Plains before joining the Rufiji River (just above Steigler's gorge), collecting *en route* the Kitete and Sanje rivers.

The Great Ruaha River serves many uses and users as it flows, including irrigation, hydropower generation, livestock, domestic uses, fisheries and aquatic flora and fauna.

Irrigation is the major activity and largest water user, mainly during the dry season. In the Mkoji Sub catchment, where this study was done, irrigation is farmer-managed. Out of the 120 irrigation off-takes that were observed up to 71 (58%) were local temporary structures popularly known as 'dindilo'. Other water-related livelihoods include fishing, livestock keeping and brick making. Problems arise in the dry season where conflicts and disputes over access to water become common. As much water is diverted to the fields for irrigation and brick making, the reduced river flows fail to supply full requirements downstream. This has brought a lot of environmental concerns about the stresses to aquatic ecosystem. Downstream of the Ruaha National Park there are two hydro power stations (Mtera and Kidatu) depending strongly on the basin for their water for power generation, contributing about 50% of the Tanzania national grid. Thus, the study area is a typical example of Africa's small-scale and farmer-managed water use, where flows are highly variable while water measurements and sophisticated infrastructure control structures are largely lacking. Yet, water uses increase rapidly leading to growing water scarcity downstream during the dry season.

Methodology of the study

This study was conducted under the DFID and IWMI funded project, Raising Irrigation Productivity and Releasing Water for Intersectoral Needs (RIPARWIN) in the Mkoji sub-catchment of the Great Ruaha River Catchment in the Rufiji basin between July 2002 and October 2004. Two villages were selected in the upper catchment, middle areas and the lower plains, making a total of six villages.

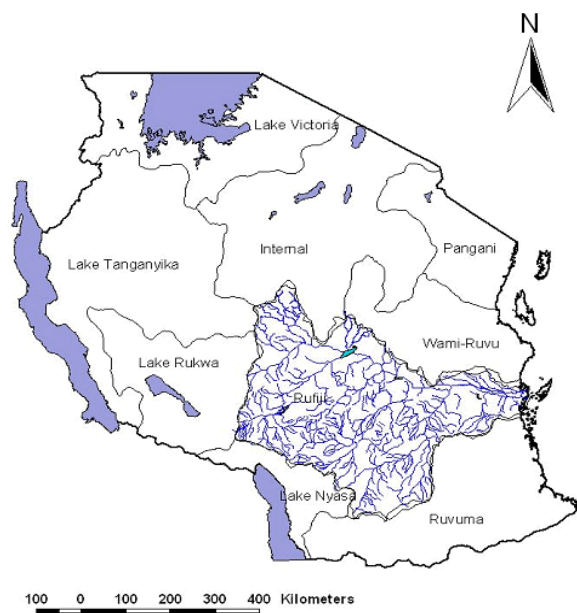


Figure 1: Map of Tanzania showing Rufiji Basin with its river networks and other basins

Three Participatory Rural Appraisals (PRAs) were conducted, one in each zone, to gather preliminary information on the subject matter. Semi-structured interviews Focus Group Discussions in each zone were conducted, involving ten key informants and eight district officials from the two districts of the Mkoji Sub catchment. The respondents were invited in the role-play River Basin Game¹ workshop. The findings were then analysed and feed back to the respondents through another River Basin Game workshop.

2. Formal Water Legislation and the Potentials of Water Reform

For long, water allocation and management in the Sub Saharan Africa has been determined by the local customary arrangements that existed among the local communities in specific river basins. Although formal water management and legislation was later introduced by colonial rules through various Water Ordinances in the early 1900s, the practical day-to-day water management at the grassroots level is still widely influenced by customary arrangements.

In Tanzania specifically, seeking to favour the white settlers, the colonial minority introduced centralized water authority and water use registration. By 1948, the British colonial government had vested absolute water authority in the colonial rulers³. Several ordinances were transposed from England and/or India to intensify the same. After independence in 1961, the new government continued the principle, declaring that 'all water in Tanganyika is vested in the United Republic' under the Water Utilization (Control and Regulation) Act 1974, section 8. The Act echoed the Water Ordinance of 1959, by which governors and then ministers were to delegate water control authority to various officers and water bodies.

The framework for integrated water resources management is laid out in the Water Utilisation (Control and Regulation) Act 42 of 1974, as amended by Act 10 of 1981. The Water Utilization Act (Control and Regulation) remains the supreme law on water management in Tanzania. Both criminal and civil laws guarantee the sanctity of water management organs under this Act. Other pieces of legislation touching upon water matters in Tanzania include the Waterworks Ordinance, Cap.128 and Urban Supply Water Act, 1981. There are also many institutions interested in water⁴. However, in Tanzania, institutions that are involved in water management are loosely connected and lack basic coordination (DANIDA/World Bank, 1995). They are sectoral and fragmented with no coordination (Water Policy Draft 2002).

³ For example, the Water Ordinance of 1948, Chapter 257, stipulates in section 4: 'The entire property in water within the Territory is hereby vested in the Governor, in trust for His Majesty as Administering Authority for Tanganyika [...]'. According to sections 3 and 5 of the Water Ordinance of 1948, Chapter 257, this Ordinance also recognizes earlier rights under the 1923 Water Ordinance, lawful mining operations, some claims under the Indian Limitation Act, and native law and custom. For the latter, however, only the 'duly authorized representative' of natives is recognized (section 13 (9)). Moreover, under some conditions, natives are only recognized 'in addition to the District Commissioner' (section 33 (9)). The Water Ordinance of 1959 recognizes rights 'in accordance with an express grant made prior to the enactment of the Water Ordinance, 1923, by the Governor or by the former German Government' (section 2 – existing right (c)).

⁴ Institutions that influence or have interest on water in Tanzania includes; Commercial Law Registration and Industrial Licensing Department-Ministry of Trade and Industries, Tropical Pesticides Research Institute (TPRI), Ministry Energy and Minerals, Tanzania Bureau of Standards, Local Governments (District and Municipal Authorities), National Urban Water Authority, Investment Promotion Centre, President's Office, Factories Inspectorate, Ministry of Labour, Principal Water Officer or Regional Water Engineer, Pharmacy Board, National Land Use Planning Commission, Director of Public Prosecutions, National Food Control Commission, Dairy Board, among many.

One of the recent paradigms in water resources management is the linking between water rights and water charges. In line with this, the government, supported by the World Bank, introduced a new water rights and taxation system in 1994 and refined this in 1997 and 2002, every time without public consultation. The system requires everyone in Tanzania using even a little bit of water for production to register to obtain a 'water right certificate' from the Ministry of Water and Livestock Development. Registration costs TSh 35,000 (about US \$ 35.00) and the annual economic water fee of at least TSh 40,000 (US \$ 40.00) per year.

Taxation and charging for water was expected to serve both water management and cost-recovery objectives, as expressed in four key assumptions: a) *'Payment for water would deter overuse and hence avoid waste of water'* (World Bank 1996). This was expected to mitigate this real or perceived growing water scarcity. b) *'Payment for water, coupled with water rights would reduce water related conflicts'*. c) *'Payment for water would generate income to sustain water management initiatives'*.

The National Water Policy (URT, 2002) expresses similar expectations.

"Economic instruments include water pricing, charges, penalties and incentives to be used to stimulate marketing mechanism, and serve as an incentive to conserve water, and reduce pollution of water sources" (URT 2002). *"decision-making in the public sector, private sector and in civil society on the use of water should reflect the scarcity value of water, water pricing, cost sharing, and other incentives for promoting the rational use of water"* (URT 2002). *'Economically, trading of water rights, application of economic incentives and pricing for water use, shall be gradually built into the management system as a means or strategy for demand management and water conservation'* (URT 2002).

The practical implementation of this argument ('enhancement of water fees and pollution charges as an incentive for water conservation and pollution control, and as a source of funds for water regulation activities, catchment conservation, and water resources monitoring' (World Bank 1996 Annex A)) would be via the water officers.

'The basin water offices will be mandated to collect revenue such as fees and charges and to be used to meet the cost of regulatory functions and financing of water resources assessment services. The basin water offices and basin water boards will be required to account for the use of these funds, which will also be audited annually by Government auditors as is occurring with other public funds' (World Bank 1996 Annex A).

Moreover, in the new legislation the categories of use are classified in an order of priority as a guide only, and not as a directive. In granting a water right, the use of water for domestic supply is given the first priority⁵, and then the use for livestock, irrigation, and hydropower generation, industrial and mining purposes. In the new Bill, it is proposed to prioritise environmental water requirements only next to domestic needs. This is an important turning point in that the national water management frameworks recognise, at least theoretically, the human and livelihood needs for water and those of the environment for a better sustainable ecosystem.

Thus, the present water rights system, as widely advocated, is expected to function effectively as a registration tool, a taxation tool, and a tool to mitigate conflicts, in

⁵ Any person having lawful access to a source may abstract water for domestic purposes without obtaining a water right.

particular in the dry season. Initially, water rights were only meant for water uses registration and for conveying some meaning of legitimacy of use. Water rights as a taxation tool and, through taxation, a water management tool is quite recent.

However, the research findings presented below show that the newly introduced purpose of taxation distorted the entire purpose of water rights. The system appeared even counterproductive in reaching the new goals of taxation of cost-recovery and water management.

3. Pitfalls of Water Rights as a Registration Tool

Water rights administration is complex to operate. Some water rights were issued under the repealed Water Ordinance, 1959 which had different provision for payment altogether. The Water Ordinance, 1959 was repealed by the Water Utilization (Control and Regulation) Act No. 42 of 1974. Over time water rights have been abandoned, either by migration, or death of the bearers, or by changing river regimes, depths and flows. Other water uses have changed, far from the original purpose of the application. Some water rights have been illegally transferred to new holders or sublet; other water right holders have changed their practical abstraction, mostly increasing the quantities of water they use. Furthermore, water rights are season-blind. They are issued as annual averages, irrespective of the season despite major differences in availability and value of water in the wet and dry seasons. The gap between the registered and actual water uses is probably huge indeed. This lack of reliable quantification may have exacerbated the inability to operate the water rights contributing to water conflicts between May and December when there is scarcity.

The study also found out that the procedure for application of water rights is long, complicated, time consuming and bureaucratic and is too much wanting for poor water users to attain. The applicant is required to fill in an application form (5 copies) and submit them to the Water Officer (or to the Regional Water Engineer, in cases where there is not a Basin Water Board). A letter from the Village Government where the abstraction will take place must accompany the form. If it is a large project, the applicant is required to submit an Environmental Impact Assessment (EIA) report to the Water Board. The Water Officer registers the application and prepares an official notice setting out the particulars which is published in the Government Official Gazette, served upon affected persons, and displayed at the office of the district in which the right will be exercised. After receipt of any further reports required by the Water Officer⁶, the application is submitted to the Water Board for deliberation and decision. This unduly long procedure does not sufficiently encourage local water users to apply for water rights. For example, in two of the six villages studied, hardly a quarter (25% and 17%) knew the procedure. In the remaining four villages, nobody knew the procedure!

Procedurally, the water rights system is wanting. The application process is unnecessarily long, bureaucratic and time consuming, so a typical kind of discouragement for weak applicants. As it is now, the procedure is neither pro-poor nor does it seek to empower the grassroots water resource users to acquire a water right.

In sum, the water rights system fails as a registration tool. Establishing and maintaining water users register is a challenge due to fluctuating numbers hundreds of small-scale users. Even with lists, establishing location of users and/ or estimates of volume of water

⁶ These reports may include some or all of the Hydrological report from the Regional Water engineer, Agricultural report, Natural resources report, Administrative Report from District Commissioner and District Executive Director

used is more difficult, especially without the bureaucracies, maps, and measuring devices required. As such, there are only partially available data for water users' names and site estimates without correct volumes abstracted. Any attempt to qualify and maintain this information is undoubtedly expensive.

4. Pitfalls of Water Rights as a Taxation Tool

Volume-based rate setting may seem objective and fair. However, in the absence of any objective basis to assess the volumes allocated and, thus, to set volume-based rates, Water Officers can only rely on their subjective judgement. Even nominal differences by ranking structures according to their sizes appeared difficult. In the Mkoji sub-catchment, for example, the volumes and related fees for the larger structure Inyala A were initially set at lower rates than for a nearby smaller structure of Inyala B. The water users complained. In this case, the water officer accepted the complaints and changed the fees the other way around. In other cases there is enormous confusion among small- and medium-scale users in the Upper Ruaha about the amounts to be paid (Sokile, 2003; Gausson 2003). Moreover, the billing mechanism is also confusing for water users because they do not know whether the prices are estimated for the wet season or for the dry season. As such those who use water only in dry or wet season question the legitimacy of paying for wet or dry season respectively. Since volumetric water pricing is based on the water rights, there is always a temptation to raise more income through issuing more water rights.

Taxation that is based upon a very weak registration tool is weak indeed, resulting in both inequity and inefficiency. Rate-setting on the basis of volumes that can never be measured objectively in the absence of measurement and control structures is 'corruption by design'.

Accountability procedures in fee collection are also weak. Water Officers at the various levels have been mandated to collect and transfer the water fees. The Water Office responsible writes receipts for taxes received, but there is no link as yet between the administration of fee collection and the registers of water right holders. Further, when submitting the collected funds from the sub-catchment office to the basin office in Iringa, the accountant notes the amounts in the books. A public auditor is supposed to check the various amounts, but the auditor's willingness to check the money contributions to basin offices is limited. The public auditor's key interest is the publicly allocated funding from Government. Without a sound transparent system to administer and justify public money flows, the basin and catchment level officers render themselves even more vulnerable to accusations of corruption.

Moreover, the first ultimate goal of water taxation, which is fund mobilization to pay for government's services for water resources management and basin institutions, appeared unachievable among many small users – but feasible among private large-scale users. The revenues accrued from water appeared far low below the targeted amount. Only some 39% of the registered water right holders pay the levies, the majority of whom are domestic water users and large-scale private companies. Large-scale state irrigation schemes and individuals are the leading culprits in not paying for water. Apparently, among many scattered small-scale water users, the government agency responsible for collection of fees spends considerably more time and resource to collect considerably less total fees- thus costing both the government and the agency. Yet, introducing higher

charges for small-scale users would be challenged by exacerbating rural poverty and may trigger a lot of political concerns.

5. Pitfalls of Water Rights as a Tool to Mitigate Water Conflicts

The second overarching goal of the new water rights system envisaged was to reduce water related conflicts. However, research findings revealed, again, the converse. First, the incentive of revenue collection contributed to overallocation of water rights, at least on paper, in sub-catchments where water users were aware and willing to apply for water rights. For example, in the Mlowo River in Moji Sub catchment, 19 water rights have been allocated amounting to more than 4.1 cumecs against the peak average river flow of hardly 2.1 cumecs. per... day/month/year?

Second, in practice, paying for water distorted the local customary arrangements for water allocation and management, aggravating downstream water scarcity. Taking the example of Inyala village in the Mkoji catchment, three window periods can be identified as a consequence of introducing water fees, as shown in figure 2 below.

Figure 2: Effects of Water Charges to Water Management Initiative in Inyala village

Period	Practice	Effect
Pre- water fees (before 1997)	Mainly customary	Status quo
Water fees introduction (1997 –2000)	Farmers contributed for Water right application fees and water user fees, in total amounting to TSH 240, 000.00 (90,000.00 and 150,000.00 for Inyala A and B respectively), distributed to individual farmer, each paid an average of 4000.00- another sum was to sustain the local office.	Area under irrigation expanded by 40%, farmers felt more value of water, more water conflicts erupted, land values and rent values increased in the irrigated areas from TSH. 20,000.00 per acre before water fees to 40,000.00 per acre per season?year?.
Water fees operational (2000-4)	Farmers formulated water roasters for rationing water; Farmers agreed to restrict area under crop cultivation to 0.25 acre and agreed on various by-laws to enforce the roasters	Conflicts reduced within the schemes, but intensified between the schemes. The upstream abstractors would take all water from the river to justify their fees.

6. Conclusion and Recommendation

Managing water through water rights is still a challenge for Tanzania. The newly introduced water rights system fails as a taxation tool in that, unlike the popular opinion (World Bank, 1991), taxation cannot recover costs of water management nor deter water use in areas without the required water measurement and control structures, which is typical for most of Tanzania and Sub Saharan Africa. This is unlikely because blanket charging rarely acts as deterrent to resource use. If any, it increases water use (Sokile & van Koppen, 2003). In the Mkoji sub catchment, experience has shown that farmers expanded their fields and caused more water related conflicts after the introduction of water charges.

Last but not least, the water fee, seen as 'water taxation', antagonizes people in the Upper Ruaha Sub-Catchment, because they suddenly have to pay the government without seeing any improved water or support service. Questions of legitimacy for payment, equity in allocation, cost-recovery mechanisms and the general collection, maintenance and upkeep of water rights systems information is still to be answered. Unlike the expectations of the government through the World Bank support, the introduction of water charges and fees

has not sufficiently improved water management imperatives but rather has complicated the matter.

Therefore, it is recommended that, at least in the near future, registration of water users should only include large-scale users who are easily reachable and accessible. The records should be kept in ledgers and electronically with sufficiently detailed information possible, which indicate, among other things, grids and estimated volumes abstracted and should be reviewed at least on annual basis. Similarly, payment for water should only concern users who use large volumes of water and who can settle water bills through banker's drafts and cheques to minimise costs of follow up.

Finally, water rights should be revisited to allow a more flexible system of a sort of water use licence that would allow periodic review and adjustments.

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ⁱ River Basin Game (RBG) is a role play tool that is used to elicit stakeholders feelings and opinions with respect to his/her strategic location in the river basin and how that location affect his/her seasonal access to water. In November 2002, forty-five local water users from upper, mid and lower zones of the Mkoji catchment were invited in the workshop and as they played different roles in the RBG, they discussed several implications of the external state-based intervention in water management. In July 2003, forty-two senior water management stakeholders and decision makers attended the second workshop and discussed several expectations and implications of both local and state-based institutional considerations on water management.