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Hillbom, Ellen

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PO Box 117
221 00 Lund
+46 46-222 00 00

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Development Economics

Security – A First Priority

*The Strength of Communal Property Rights Systems
Governing Water in Contemporary
sub-Saharan Africa*

Ellen Hillbom

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The Strength of Communal Property Rights Systems Governing Water in Contemporary sub-Saharan Africa^{*}

Ellen Hillbom

1. Introduction

Property rights theory and public choice often depict smallholders in developing countries as irrational, conservative, inefficient, and unable to seize market opportunities. Development is equated with creation of private and tradable property rights to natural resources, farmers acting as wealth-maximizers specializing in production for the market, and rationality is defined as economic efficiency.² In the meantime communal property rights regimes with private user rights have stood strong in contemporary pre-modern sub-Saharan Africa and their prevalence deserves to be further investigated. The question arises whether this continuity is a hinder for economic growth and even a cause for underdevelopment on the continent. Here it is claimed that these institutions are well functioning parts of the pre-modern socio-economic structure and capable to change when there is also structural change. The historical perspective of this study stretches over eighty years, 1925-2005, thereby offering an opportunity to evaluate driving forces behind continuity and change in property rights institutions.

The paper follows in the footsteps of Schultz (1964), Lipton (1968), and Scott (1976) in arguing that smallholders in contemporary pre-modern societies should be viewed as rational in the broader sense of the word implying that they manoeuvre within the socio-economic

^{*} The author would like to thank Fahlbeckska Stiftelsen in Lund for the financial support and Anne Jerneck and Chritster Gunnarsson for valuable comments.

The empirical material has been extensively presented in my PhD thesis: E. Carlsson (2003) *To Have and to Hold: Continuity and change in property rights institutions governing water resources among the Meru of Tanzania and the BaKgatla in Botswana; 1925-2000*. Stockholm: Almqvist & Wiksell International. The study builds on written secondary material, documents, archival records, interviews with academics, government officials, and water users, as well as direct and participatory observations. The primary empirical material was collected during six lengthy field trips 1997-2000.

² See for example Barzel (1989), Demsetz (1967), Olson (1965).

structure to the best of their ability. Communal property rights institutions make up a dynamic part of these societies and they correspond with both the socio-economic structure and individuals' livelihood strategies. Institutions are continually evaluated by society and their prevalence rests mainly on efficiency and suitability, although on occasion change is dictated by individual or group interest. Continuity equals security to members of society, but continuity is an active process and the institutional structure has the potential to change.³ Communal property rights systems are also characterised by power struggles, discrimination based on gender, age, ethnic origin, and status, patron-client relationships, and conflict and should therefore not be depicted as being equal to all.⁴

Pre-modern societies are defined as agrarian, but not having experienced agricultural transformation. They are characterised by a low level of technology and education, agricultural production is primarily geared towards subsistence, in the absence of a modern state people rely on local authorities and social networks, and factors of production are controlled and allocated through kinship and social belonging. The pre-modern socio-economic structure is the framework within which smallholders operate. It induces a risk-spreading behaviour including strategies to access multiple natural resources and investing in social networks. As long as smallholders have minor savings, limited access to credit, and no security provided by a modern state they are reluctant to take risks investing in new farming methods and, hence, unable to perform the leap to specialization. To be risk-minimisers or wealth-maximizers are strategies conditioned by the socio-economic context and a change from the former to the later can eventually come about as the agricultural sector is transformed. Change can be induced by both endogenous and exogenous factors such as population increase, new farming technology, sound government policies, improved infrastructure, education, available credits, and market extension. It results in increased productivity leading to improvements in incomes and standards of living for the smallholders and allows for accumulation of savings, building financial buffers, specialization, and privatization of natural resources.

Water holds a unique position among natural resources. Here it is shown that its specific and complex characteristics have great impact on property rights institutions governing both domestic and agricultural use. In many instances water is an economic asset which is becoming increasingly valuable as it is being overused and misused, resulting in

³ North (1981) pp. 5-12, (1990) pp. 6-9.

⁴ Berry (1989) Peters (1992), Zwarteveen (1997).

alarming scarcity.⁵ It is, however, so much more than a tradable good and the strong human rights dimension hinders exclusion while requiring fairness in distribution.⁶ As a seasonal and fluid resource it is challenging to measure, allocate, monitor, and protect. The characteristics of water highlight smallholders' vulnerability and reinforce security concerns.

To fully understand the prevalence and underlying principles of communal property rights regimes the analysis has to go beyond individuals' activities. It is only partial unless it is recognized that diverse socio-economic structures offer a variety of conditions determining livelihood strategies. Smallholders are agents making deliberate choices about how to act within the framework of the institutional structure and at the same time they are affecting that structure with their actions.⁷ It is argued that to analyse the prevalence of communal property rights systems an embedded approach is required recognising the interaction between structure and agency.⁸

The primary empirical material in the paper rests on investigations into two case areas in sub-Saharan Africa – Meru to the East of Arusha in North-East Tanzania and Kgatleng District in South-East Botswana. The aim is to draw analytical generalizations concerning the ideology and logic both embedded in property rights institutions and expressed in livelihood strategies. In accordance with comparative history this is achieved by investigating the two historical trajectories and comparing them individually to theory.⁹ Both cases are of interest as they contain interesting property rights structures and the analysis shows that they share a set of principles regarding allocation and management of water. This is despite the fact that they in many respects are opposites representing two diverse farming systems, having varied historical experiences, institutional structures, and government influences. It is also important to note that while Kgatleng is staying pre-modern Meru is experiencing an infant agricultural transformation.

The paper will start off with the debate on how to understand and analyse security strategies. Then moving on to defining property rights institutions before heading into the two case study areas. The investigation into specific property rights governing water is organised according to the various kinds of sources that are found in the case areas. It is followed by an analysis of structural continuity and change in institutions and livelihood strategies.

⁵ See for example Perry et al. (1997).

⁶ See for example Ferguson and Derman (1999).

⁷ Giddens (1987).

⁸ Cleaver (2000).

⁹ Skocpol and Somers (1980).

2. Analysing security strategies

Smallholders who live within the institutional structure of pre-modern agriculture rely on unchanged factors of production and factor relations. They command very small means and are unwilling to invest those means because of low marginal productivity and consequently they develop a risk-minimising behaviour.¹⁰ Underdeveloped, climatically uncertain, subsistence, largely illiterate rural communities should not be assumed to offer an environment of neo-classic perfect competition. Smallholders who operate in seriously imperfect factor markets that impede an economically efficient allocation of production are generally combining progressive and conservative practices searching for a functional survival strategy. Imperfect factor markets fulfil a precise function in the socio-economic context and they are continuously evaluated and kept as they provide security.¹¹ In our time and age very few societies are “traditional” in the meaning put forward by Schultz (1964) implying that they are static and without external influences. With a few exceptions all societies of the world are touched by globalization and change takes place as new technology and factors are assimilated, but the pre-modern structure may still prevail.¹² The issue is when change has amassed to a discontinuous break and new socio-economic structures have been created.¹³ In pre-modern agrarian societies this boils down to when there has been agricultural transformation. As change is a gradual process security strategies may be continuously adopted in the meantime.

In Norths’ grand theory relative price of factors of production, preference and taste, ideology, and external shocks are identified as the driving forces behind institutional change.¹⁴ To analyse the whole process a larger framework is needed, one that recognises that society is made up of material resources, power relations, and existing institutions, which continuously interact with one another.¹⁵ As development and survival of institutions must be analysed at both the structural and the individual level the inference is that change in property rights institutions are causally linked to both change in the socio-economic structure and change in livelihood strategies. The causal chain runs in multiple, concurrent directions¹⁶ and change in property rights

¹⁰ Schultz (1964) pp. 36-41.

¹¹ Lipton (1968).

¹² Lipton (1968).

¹³ Gerschenkron (1968).

¹⁴ North (1990) pp. 84-89.

¹⁵ Berry (1993) p. 13.

¹⁶ Gerschenkron (1968).

institutions can be instigated from both structure and agency, but will be a failure unless it is compatible with structure. The overriding motives for institutional change are search for efficiency and pursuit of interest while the easily observable rationalities are the lowering of transaction costs, path dependency, and ideology.¹⁷

Absence of investments in the rural areas combined with unwarranted taxation result in poor trust for the government and when smallholders perceive the state as a threat to their livelihoods they will withdraw and rely on local authorities and systems of production¹⁸. Patron-client relationships, work-sharing, and communal property rights are part of smallholders' risk-spreading strategies and investments in social networks are often all that stands between the rural poor and ruin.¹⁹ Understanding the principles and enforcement of communal property is a key to analysing security strategies as the rural poor rely on entitlement and access to natural resources to guarantee their survival.²⁰

The degree of embeddedness of economic relations in social life differs between societies and can be used as a variable when investigating various socio-economic structures.²¹ In the case of pre-modern societies the degree of embeddedness is extremely high, which is manifested in smallholders' livelihood strategies. This paper takes a pragmatic view on the livelihood concept defining it as the way in which a living is obtained by the individual or the household by accessing assets and engaging in various activities.²² Focus is on selected components of livelihood strategies, namely water as natural capital, social capital in pre-modern societies, and how rights are claimed in relation to kin, family, and gender. Just as institutions livelihood strategies are continuously evaluated and are characterised by continuity and change.

In pre-modern sub-Saharan African societies a person achieves status and influence in relation to his/her ability to mobilise loyalty and gather payment, usually in the form of labour and in kind, from other members of society. Loyalty and payment are in turn earned through one's capability when it comes to organizing production, negotiating resource allocation, and involvement in exchange. As these are patriarchal societies low status and inability to mobilise resources is often related to gender, but can also be due to age and ethnic origin. Influence in its prolongation brings with it incomes to the wealthy while loyalty buys

¹⁷ North (1990) pp. 92-96.

¹⁸ Hydén (1980).

¹⁹ Scott (1976) pp. 15-26.

²⁰ See for example Jodha (2001), Sen (1981).

²¹ Granovetter (1992).

²² Ellis (2000) pp. 7-10.

protection and security for the poor.²³ It is especially in economic systems where natural resources are available while capital is limited that one can expect to find these strategies of investing in social networks, since this gives control over labour resources, which in turn guarantees control over production.²⁴ It lies in the economic interest of both high and low status individuals, of the wealthy and the poor, to uphold the system.²⁵ When there is significant inequality in levels of income between members of a group governing a communal resource the wealthier property holders have the most compelling incentives for contributing towards the management of the resource. They receive enough benefits from the use of the resource to make their extravagant contribution worth while and smallholders can reap benefits from the resource, without covering the costs that they inflict.²⁶

3. Defining property rights institutions

Property rights found in the two case areas are categorised according to three sets of definitions; who is the property holder, which rights does s/he hold, and are those rights enforceable or not. The first set of definitions then entails a classification of open access and state-, communal-, and private property.²⁷ A clear distinction has to be made between unregulated resources that are open access and regulated communal resources.²⁸ All resources held by a group by law or custom are communal while private property is equal to individual property, hence, the dichotomy lies between private and communal and not between private and state property. Property holders' rights are in turn classified according to ownership, user rights, and access. Although ownership indicates stronger rights concerning utilisation than is the case with user rights, there is no clear correlation. Both owners and users may inherit, bequeath, sell, and give away their property, but user rights have a position of being a "sub-right" in relation to ownership²⁹ as ownership is tied to the resource and the source while use is associated with allocation. Access signifies an informal concession that is socially recognized and enforced, but still a right that may stand as strong as ownership and use.

²³ Berry (1993) pp. 142ff, Chanok (1991).

²⁴ Spear (1988).

²⁵ Berry (1993), Hydén (1996).

²⁶ Baland and Platteau (1999).

²⁷ See for example Bromley (1989) p. 205, Feder and Feeny (1993).

²⁸ See for example Baland and Platteau (1997).

²⁹ See for example Feder and Feeny (1993).

Rights that people hold to natural resources can be claims that are either legally or socially acknowledged, and these two different sets of recognition of rights do not automatically coincide. All rights are held with the support of an authority system that can be called upon for enforcement, but different authorities may support simultaneous legal systems and their support may also lie outside judicial regulations altogether.³⁰ In sub-Saharan Africa it is necessary to recognise the duality of the judicial system with both Statutory and Customary Law supporting *de jure* rights that are not always synchronised. On top of the dual judicial system there are also *de facto* rights supported by local authorities and customs. A *de facto* right is a presentation of the right as it is accepted and controlled in real life and it often depicts an adaptation to social requirements or is the result of property holders not enforcing their rights.³¹

A very intricate web is woven with multiple layers of property rights, property rights holders, and enforcement of rights. It has been pointed out that this legal pluralism³² can obstruct the economic endeavours of smallholders as it often results in few clear guidelines and weak *de jure* rights. In the midst of competing property rights systems there are also common power struggles. Property holders are weak or strong depending on their ability to amass the recognition and support of their rights from authorities and society, inequality and discrimination is linked to economic and social dependence. Consequently it is necessary to discuss the implications of insecurity and power, and how they may have repercussions not only on formal rules, but also on different forms of reciprocity obligations making up the safety net.³³ There is no ground for claiming that customary property rights regimes by their very nature would give equal opportunities to all or be fairer than statutory property rights. It can, however, be claimed that as a rule they are better adjusted to the over all socio-economic structure of the pre-modern society and better matched with the security strategies of smallholders.

As *de facto* rights or informal institutions may accelerate, prolong, or hinder, change in *de jure* institutions social behaviour has the power to influence the process of formal structural change.³⁴ Every society should strive to achieve a close fit between legislation and practices as this induces voluntary compliance to the formal system and simplify monitoring and enforcement. New property institutions cannot be imposed at low cost by external authorities unless participants in the

³⁰ Williams (1977).

³¹ Berry (1989), Williams (1977).

³² Spiertz (2000).

³³ See for example Peters (1994), Scott (1976).

³⁴ North (1990) pp. 86-88.

field consider them valid. “Getting the institutions right” is a difficult process, consuming much time and possibly invoking a lot of conflict. In order to design an optimal institutional solution, reliable empirical knowledge about the existing institutional structure in the local setting is required.³⁵

4. The case studies

Comparative history uses relevant, but replaceable cases for demonstrating the usefulness of a theoretical argument and analyses are made through cross case conclusion.³⁶ Kgatleng has several features in common with other semi desert, agro-pastoral societies in sub-Saharan Africa, such as scarce and erratic rainfall, low human- and high cattle population density leading to risks for overgrazing.³⁷ The Tswana have a settlement pattern holding resources in three diverse areas: the village compound, the arable lands outside the village, and the cattle posts on the grazing range. As crop farming generally relies on rain water it is for domestic use and livestock rearing in each of these settlements that smallholders secure property rights to water sources such as wells, boreholes, dams, haffirs³⁸, and taps. Control over water resources is the key to explaining the utilisation of the grazing range.³⁹ Rural Kgatleng has indirectly, through migration opportunities and financial remittances been touch by the economic success of Botswana, but it continues to be pre-modern in its socio-economic structures.⁴⁰

Climatic, geographic, and economic conditions in Meru are fundamentally different to Kgatleng. Rainfall is generous in the highlands⁴¹ and a number of rivers flowing down the fertile Mount Meru slope allows for intensive farming with gravity irrigation which is especially common in the dryer lowlands. This is a vital and relatively wealthy region characterised by high population density, productive agriculture, mining activities, large tourist industry, and is a meeting place for both national and international government agencies and NGOs. This plus the fact that Meru is located along the Dar es Salaam-Nairobi road has resulted in intense economic development with high standards of living and levels of incomes.

³⁵ Ostrom (1990) p. 14.

³⁶ Skocpol and Somers (1980).

³⁷ See for example Bhenke et al. (1993), Lane (1998).

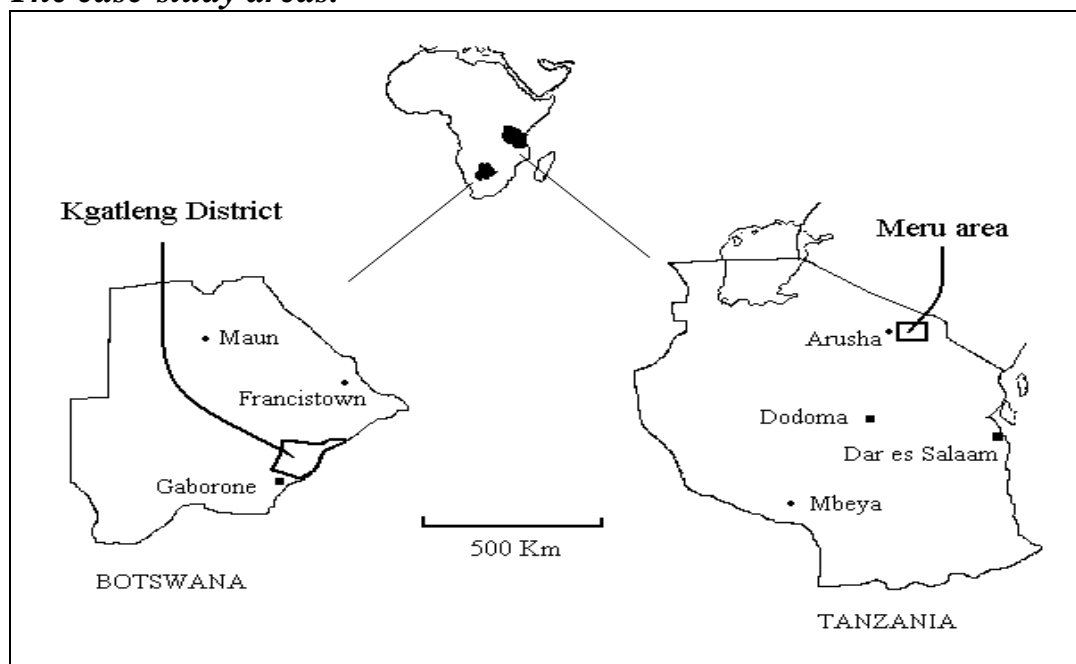
³⁸ A haffir is a small hand dug dam.

³⁹ Peters (1994).

⁴⁰ Carlsson (2003) pp. 89-101.

⁴¹ Highlands is the area located on the Mount Meru slopes while the lowlands are located south of the mountain.

The case-study areas.



Increasing off-farm incomes and an intensification of farming methods have started off this area on the road towards agricultural transformation and socio-economic modernization. The driving forces behind the infant transformation is accessibility to infrastructure, increasing urban demand, urban and rural market extension, and population increase. The move towards structural change has also affected property rights institutions governing land resources and resulted in increased *de facto* privatization.⁴² Still, the area continues to be pre-modern in its economic structure and the communal ownership of water resources has not been altered. The irrigation culture among the Meru shares great similarities in physical features such as gravity irrigation, low level of technology, hand-dug furrows with grave evaporation problems, and social organization with a number of contemporary irrigation systems in East Africa.⁴³

It was not until the mid-1920s that the British colonial administration in each of the two case areas began to establish policies concerning ownership and allocation of water resources. This included the drilling of boreholes in Kgatleng and initiatives to establishing water legislation due to increases in water conflicts in Tanganyika's Arusha District. Until then property rights structures regulating African smallholders'

⁴² Larsson (2002).

⁴³ See for example Adams et al. (1994), Lerise (1996), Spear (1997).

access to water resources were governed by Customary Law and tradition premiering communal ownership and private user rights.⁴⁴

5. The nature of water and property rights institutions governing water sources

Commons scholars agree that communal property institutions have the ability to be successful in allocating and managing natural resources and that they have positive influences regarding use and conservation.⁴⁵ Here we are, however, not concerned with conservation, but with historical processes of institutional development. Three specific issues regarding the access to and control over water as a unique resource stand out when analysing prevailing security strategies and communal property rights. They are the human right vs. economic good aspect, water as a common-pool resource, CPR, and the physical characteristics of the actual sources. In contemporary pre-modern sub-Saharan African communities water as a life supporting CPR has given it a status in Customary Law and tradition as a free public good and a human right and changing this attitude comes at a very high cost at both the structural and the individual level. Rights to access drinking water for humans and domesticated animals, as well as water for domestic use without charges are inherent in African Customary Laws and practices. To deny such access would go against peoples' perception of human rights and would hit the poorest and most vulnerable members of society the hardest. Water for productive purposes is also regulated. Providing the necessary resources for agricultural production becomes part of the pre-modern society's responsibility towards smallholders and are not easily separated from human rights arguments.⁴⁶

Aquifers and rivers are examples of CPRs characterised by difficulties to exclude and each unit extracted equals one unit less for other users.⁴⁷ Due to these characteristics CPRs are usually accessible to a large number of people, being state or communal property with more or less *de facto* open access characteristics and having strong public goods principles attached to them. In case of scarcity this non-exclusive character must become controlled through strict regulations as CPRs otherwise are vulnerable to the "tragedy of the commons" dilemma.⁴⁸ A successful communal ownership of CPRs must then include clearly

⁴⁴ Carlsson (2003) pp. 65-66.

⁴⁵ Johnson (2004).

⁴⁶ Carlsson (2003) pp. 119-137.

⁴⁷ Ostrom et al. (1994) p. 6.

⁴⁸ Hardin (1968).

defined boundaries and be matched with local institutions and conditions. There has to be monitoring, graduate sanctions, and arenas for conflict resolution.⁴⁹ At the onset of the colonial era land in the two colonies, Bechuanaland and Tanganyika, was divided into Crown Land and Native Reserves and in accordance with the principles of Indirect Rule the British colonial administration decentralized responsibility and expected water resources, both surface and ground water CPRs, to be managed and allocated by the tribal authorities within the Native Reserves. Both Kgatleng and Meru fell under the administration of local Native Authorities who treated CPRs as free public goods and protected their human rights dimension and individuals' access rights. The state has in the past continued along the same lines and chosen to be a fairly silent property holder, but with increased scarcity, consequent conflicts, and escalating environmental effects of overuse the state is now becoming more active. As long as the CPRs stay *de facto* open access they are natural parts of smallholders' security strategies and property rights cause them few troubles. Instead it has been property rights to water sources that has governed allocation. Smallholders see the larger water bodies as belonging to all community members and being "provided by God", while sources are constructed and controlled by men and access is achieved through property rights institutions. As the state is tightening its grip over the CPRs it also comes into conflict with traditional institutions governing these sources.⁵⁰

The logic guiding the pairing of water sources with property rights regimes is fundamentally a mix of ideology and a pragmatic view on reality. Only water sources that can be closely monitored, such as boreholes, wells, dams, haffirs, and yard taps, in this study, and who's characteristics makes it possible to exclude other water users are being held as private property according to Customary Law and tradition. Private ownership is then an option, but not a rule as all sources except haffirs are also held as communal property. Exclusion as a physical feasibility is a precondition for privatization, but this does not always make it economically advisable nor socially acceptable. Property rights governing the fixed water points are also connected to property rights to the land on which they are located. A water point constructed on private land is also private, while a water point on communal land is often communal, although it can be private. Water sources that have a long running such as rivers and furrows are as a rule communally shared by the farmers who live in their vicinity.⁵¹

⁴⁹ Ostrom (1990) pp. 91-101.

⁵⁰ Carlsson (2003) pp. 119-137.

⁵¹ Carlsson (2003) pp. 137-141.

5.1. Managing rivers and furrows

In regard to property rights and payment for water the situation in Kgatleng and Meru are similar to one another in several respects. Water taken from rivers for domestic and livestock use have been *de facto* open access with the blessing of the local authorities. In Kgatleng it is only the eastern part that can profit from the Limpopo River and most livestock holders in the vicinity water their animals regularly at the river. Irrigation was traditionally also free for smallholders, but today irrigation for any commercial use must be regulated through water rights. There are, however, few smallholders who are affected by this regulation as most of them rely on rain for their crops.⁵² In Meru there are numerous rivers flowing down the mountain slopes and it is in relation to the irrigation furrows that authorities have been regulating allocation and promoting control. Furrows constructed by Africans during the colonial era sought the permission of the native authorities and got their water rights granted by Customary Law. After independence those rights were recognized in principle by the national government, but registration was slow. Since the introduction of new national water policy and the establishment of the Pangani River Basin in 1991 regional authorities have become aware of the need to obtain full information on the use of river water and to regulate to prevent over use at the head end of the rivers. Governments' increasing interests is caused both by the growing number of water users representing all sorts of interests, such as industry, comers, power dams, and agriculture and the consequent augmenting conflicts between head end and tail end users. All traditional communal furrows are now required to have formal water rights prescribing extraction and to pay a modest water fee. As water fees are a novelty they are not yet correlated to the amount used and give no incentives to conserve water. Some smallholders welcome the new system and even prefer paying for water as they feel that this strengthens their property right in relation to the state and to other users along the river. It is the furrow committee who holds the formal water right and the furrows are prime example of traditional communal property rights systems with informal private user rights for smallholders. They stand in contrast to private furrows constructed by estate holders in the late nineteenth and early twentieth century on neighbouring Crown Land who received private property rights to both land and water from the colonial administration. The introduction of private property was a drastic change in the formal institutional structure, but the impact on the African community was limited since

⁵² Carlsson (2003) pp. 130-137.

the new property rights regime was only applicable to Crown Lands. As the local population grew increased conflicts over water resources arose between the settlers and the African smallholders. In this conflict it has been hard to defend private property and private furrows have been appropriated by local communities and transformed into *de facto* communal property.⁵³

The smaller furrow systems are much easier to monitor and control than the rivers. Still, it is difficult, and often unwanted, to exclude farmers living along the furrow and consequently communal property rights regimes may be very open, taking in all who apply for membership. At the same time maintenance of the water way and allocation of water units is highly regulated checking the head-tail competition. The furrow committee members depend to a large extent on social recognition, values embedded in informal institutions, and willing compliance since strict physical control is cumbersome. As the number of water users increased and with them the demand for water, dormant and open conflict has intensified and furrow committees have to escalate monitoring and sanctioning of rule-breaking behaviour. Meru has a history of some 100-150 years of gravity irrigation. The earliest furrows were constructed through initiatives taken by leading members of society and were considered as private, belonging to the initiator. Neighbours approached the initiator with gifts in kind and were in return allowed to take water. Since the construction of elaborated irrigation systems demands a large labour input drawing on community members, furrows eventually became communally owned by all users. The later irrigation furrows have been communal initiatives and consequently from the start been considered communal property. In return for labour and the occasional smaller money contribution towards construction, maintenance, and water fees smallholders are rewarded user rights. Furrow committees responsible for allocation and management are lead by a smaller group usually belonging to the wealthier and more influential segments of society. Farmers with high social and economic status and the right connections are sometimes favoured by the committees while weaker committee members, such as single women and the elder, face problems getting allocations and may have their water stolen by other furrow members. Allocations are awarded to the individual who applies. It can be a women farming her own land, but usually it is the head of household and that person is most often a man. Men thereby control water resources to a larger extent than women do. With increasing scarcity smallholders are starting to find out the hard way that property rights are not equal to availability. Government

⁵³ Carlsson (2003) pp. 122-130.

authorities have awarded water rights for higher amounts than what is actually flowing in the rivers during the dry season, which is also the time when head end furrows exceed their sanctioned out take. Water rights and allocations then may become worthless. This highlights the problems with rewarding fixed property rights to a non-fix resource especially when they are founded on faulty information of availability, and sometimes conflicts escalate to violence.⁵⁴

5.2. Water points accessing the aquifer

Boreholes and wells are easy to monitor and control and as they are usually constructed by one individual or a smaller group of people they become private property or exclusive communal property. The water itself, however, comes from an aquifer which is a state owned CPR. Despite the more exclusive ownership accessing these sources in various capabilities may be important and intricate parts of individuals' security strategies.

When boreholes are located on private settler land and have been constructed by individuals or private enterprises, as is the case in Meru, such a combination makes private ownership the rule and these boreholes are not accessed by smallholders. The Meru boreholes go back only a few decades. They are required to be registered, to have formal water rights regulating extraction, and the owner(s) pay a water fee. Thereby the government exercise some control over the aquifer and as long as the majority of water users rely on rivers the ground water resource is not threatened by over use. In Kgatleng the British colonial administration started the first borehole scheme in the 1920s. The drilling of boreholes represented the modern technology and opened up the hardveld⁵⁵ to the cattle sector. Over the past eighty years the number of boreholes and cattle have increased to the point of reaching, or having even past, the carrying capacity of the grazing range.⁵⁶ From the start boreholes have either been private property or owned by small, exclusive groups, so-called syndicates. Especially the first generation of syndicate members was favoured as it for free took over boreholes drilled by the administration. It was made up of wealthier farmers having the financial means and social status strong enough to expropriate this novel water source. The syndicate is an example of a highly regulated communal ownership where membership is closed except for a small number of cattle holders and it is inherited, but not

⁵⁴ Carlsson (2003) pp. 122-130.

⁵⁵ Botswana is commonly classified into three ecological zones: the Okavango delta, the sandveld in the west, and the hardveld in the east.

⁵⁶ Carlsson (2003) pp. 153-157.

bought and sold.⁵⁷ To sink a borehole permission for the site and for drilling has to be obtained from the authorities. In the colonial era this meant from the Native Authorities for the Africans and the colonial administration for the government boreholes. Most boreholes have by now been registered by the national authorities and the grazing range is in theory closed for drilling. The control over water use has been and continues to be meagre as the government in practice chooses not to monitor water use, or sanctions use beyond what is stated in water rights, and does not charge for consumption. The aquifer thereby stays a *de facto* open access. At both private and syndicate boreholes there are other water users than the owners, namely hirers and dependants. Hirers can be temporary or permanent, holding a position that is inherited just as the syndicate membership. They have no property rights to the borehole, instead they pay for their water use. Dependants are usually close relatives or clients who are permitted to keep their animals at the borehole and take water free of charge and who's position rests on social recognition.⁵⁸ As it is less common that women own cattle they are also a minority among owners, hirers, and dependants.

Hand dug wells is an old and common technique in Kgatleng that requires labour, but negligent financial inputs. Also wells can be either private or communal property controlled by an exclusive group and just as boreholes they harbour hirers and dependants. The property rights institutions governing wells, thus, preceded boreholes and the later merely represent technological change.⁵⁹ The syndicates owning boreholes and wells have been criticised for being too exclusive and claims are made that wealthier and more powerful syndicate members have managed to get rid of those poorer and socially weaker.⁶⁰ This is true, but only in parts of the district located further away from the Limpopo. Close to the river membership in syndicates is less valuable and throughout the district the number of syndicate members varies from ten in the dryer areas to fifty close to the river. What is important for the argument in this paper is the conclusion that the traditional communal property rights institution itself has remained very much the same, although individual members may be outmanoeuvred and replaced. Further, that the number of water users goes beyond the owners allowing boreholes to play an important role in smallholders' access strategies.⁶¹ Since water fundamentally is recognized as a human right there is no absolute exclusion of non-property holders. On the

⁵⁷ Peters (1994) pp. 61-75, 121-128.

⁵⁸ Carlsson (2003) pp. 132-134, Peters (1994) pp. 114-118.

⁵⁹ Carlsson (2003) p. 139.

⁶⁰ Peters (1994) pp. 70-75.

⁶¹ Carlsson (2003) pp. 178-180.

communal grazing range in Kgatleng stray cattle roam between boreholes and are watered where ever they show up whether their owners hold rights to that boreholes or not. It has been estimated that strays make up as much as one third of all cattle being watered⁶² and the common view is that the system will benefit all in the end as everyone has cattle that stray.

5.3. Dams and haffirs

Dams as self-contained constructions for collecting catchment water have fairly elementary principles guiding property rights as the water collected does not in any significant way affect other bodies of water. It is easy to accept the owner of the dam as also being the owner of the water it contains. As in the case of furrows, wells, and boreholes, those actors responsible for investing labour and/or capital in the construction and maintenance of haffirs and dams are also the property holders. Another similarity to wells and boreholes is that haffirs and dams are located in areas small enough to be physically controlled and therefore it is in theory doable to apply principles of strict exclusion.⁶³

There is no tradition of building dams or haffirs in the Meru area while they have a long history and are common in Kgatleng. Dams are sometimes privately owned, but they are more often the property of a dam group where membership in principle is open to anyone who is willing to contribute in cash or in labour. Dams are as a rule located in the arable lands and used in common for livestock and domestic purposes, while haffirs because of their small size are located in the compound area and are privately owned. Using, extending, and controlling natural pans and digging for water has been a strategy for accessing water since humans started to inhabited the region. Since the 1970s construction of dams has become incorporated in government programs for extending water sources to the rural population and ownership has been handed over to dam groups.⁶⁴ Women are primarily responsible for crop farming and consequently they play a more active role in water user groups in the arable lands compared to on the grazing range. The seasonal availability of water creates the paradox that when the need is the greatest the resource is the scarcest. This is obvious when studying irrigation furrows in Meru in the dry season, but it is even more apparent when studying haffirs and dams in Kgatleng. Haffirs dry up well before the rainy season and many dams do so as well and,

⁶² Oageng (1999).

⁶³ Carlsson (2003) pp. 135-136.

⁶⁴ Carlsson (2003) pp. 135-136.

hence, use of these sources runs in seasonal cycles.⁶⁵ Boreholes in comparison have a superior advantage in that they are not affected by seasonal availability and therefore smallholders rely on them especially during the dry season.

5.4. Drinking water

The last water source that will be presented briefly is tap water. Especially in Kgatleng the government has since independence put effort into providing tap water in village settlements, both from private connections and from stand pipes benefiting the poor. In both case areas taps are owned by the state, managed by district or local authorities, and water is provided free of charge in standpipes. The greatest problem with standpipes is maintenance and vandalism, which has consequences for the availability of clean drinking water. In Meru where pipes are far apart and badly maintained people instead rely on rivers. In Kgatleng the government put greater effort into the infrastructure and stand pipes are usually functioning. In the meantime those who can afford it may avoid the problem by having private connections drawn into their yard in which case they are charged for their water consumption. A new source using new technology has been introduced by governments in both countries and as the human rights aspect is the strongest when it comes to human consumption the public goods position in regard to drinking water is undisputed.⁶⁶

6. Structural continuity and livelihood strategies

Both case areas have experienced institutional change since the 1920s, but that change has not amassed to structural discontinuity and consequently traditional property rights institutions still stand strong. The relative price of production factors have changed, in Kgatleng by the increase in cattle on the grazing range resulting in augmented demand for water and in Meru by the human population increase resulting in scarcity of both land and water resources. The increased relative price of water has, however, not lead to privatization, but instead to intensified attempts to allocate water within the traditional communal regimes and a tightening of regulations to control water users. Although capital is more frequently present now than in the beginning of the period it has only to some degree replaced labour as input. Irrigation furrows, wells, dams, and haffirs are constructed with

⁶⁵ Roe and Fortman (1982).

⁶⁶ Carlsson (2003) pp. 139, 166-168.

small capital investments and large labour efforts. Labour is still what “buys” property rights for a majority of smallholders. Within communal property rights regimes inputs are shared by all property holders, but the main financial responsibility falls on the wealthier individuals who accept this both because they are in need of the source and as a way of investing in social networks and gathering clients. These property rights institutions are supported by traditional authorities, Customary Law, and informal institutions.

The most significant external shock to the traditional property rights systems was the introduction of private property rights to water by the colonial administration. Although this change in formal legislation only occurred within Statutory Law and in Crown Lands it affected the African areas indirectly, most importantly by laying the foundation of the post-independence legislation. Stronger state involvement has then had some effect on property rights structures, but it has not altered the traditional communal property rights institutions and there are no real state induced restrictions on water consumption. Formal institutional change is really just commencing to affect smallholders in these areas as the state is slowly stepping up its involvement and attempting to eventually take over from traditional authorities.

While changes in formal property rights have been only partial change in informal rights during the colonial and post-colonial eras has even been negligible. Although informal rights have been affected by the pursuit of interest and the search for efficiency at both structure and agency levels the change does not present a break with former ideology. Instead it strengthens a story of continuity. Power relations have stayed very much the same as the state in the form of the colonial administration and post-independence government has to a large degree been absent leaving the scene to the traditional authorities. In both case areas individuals who held positions in the tribal authorities moved into new positions in the post-independence authorities and this added to a behaviour governed by tradition. The social and economic mobility in the two societies have occurred at the individual level and have not had a great affect on old patron-client relationships or the fundamental power structure.⁶⁷

From below privatization of natural resources, both land and water, has been observed in numerous areas in sub-Saharan Africa. The earliest individualization of rights to land occurred in areas involved in the cultivation of commercial crops introduced during colonial rule.⁶⁸ This development arose as a response to drastic changes in the relative prices

⁶⁷ Carlsson (2003) pp. 228-230.

⁶⁸ See for example Ensminger (1997), Hill (1963).

of land and labour and was initiated by increasing numbers of individuals sharing an interest in protecting their long-term investments in perennial crops. This privatization of resources demonstrates that African property rights institutions have the potential to change when responding to altered relative price of factors of production that lead to new livelihood strategies and ideology. Private ownership of water sources has also been developed in the two case areas motivated by the principles of a man's right to the fruits of his labour. *De facto* and *de jure* privatization of resources has continued to take place until the present, at times due to changes in relative price and at other times initiated by political authorities. From below privatization has generally been successful and top-down privatization can also succeed when it is timed with modernization in the socio-economic structure and economic development and/or it does not threaten smallholders' security. Introduction of formal private property rights is not necessarily positive for all groups in society and studies show that especially women who have relied on informal access rights to natural resources are often losers in the process.⁶⁹

Smallholders spread their risks by accessing multiple water sources and by putting labour and capital into the construction of a water point where they can claim property. Obtaining rights in accordance with established social norms is, however, not enough if they are not enforced and supported by an authority system.⁷⁰ In the two case areas Customary Laws and practices and traditional authorities are still the main guarantors for property rights claims, although Statutory Law and national governments are slowly taking over the granting of water rights. Within the maze of dual authority structures, legal pluralism, and vulnerability due to poverty smallholders search for increased efficiency is constantly checked by their security strategies accessing multiple sources. The greater the wealth the more water sources are secured with property rights in the form of ownership, user rights, and access. The strategy is most obvious in Kgatlung where the motives for this behaviour are reinforced by the settlement pattern. Other motives are the seasonality of water sources, movement of animals and increased competition for water resources. A typical smallholder may be the user of free communal tap water in the village, owner of a haffir and a dam group member at the arable lands, be a hirer at a borehole and seasonally shifting between watering livestock at the borehole and the river. In Meru the multiple access strategies are less pronounced depending on the more generous availability of water and the openness of the furrow

⁶⁹ Agarwal (1994), Zwarteveen (1997).

⁷⁰ Agarwal (1994), Bromley (1997).

committees. Smallholders may take drinking water from a tap, domestic and drinking water for livestock from the river, and be a furrow committee member to access irrigation water for the fields.

Intricately linked to the risk spreading strategies are investments in social networks. The patron-client relationships permeate all property relations and co-operation. Investments in social networks bring access to resources for smallholders and control of labour for their patrons. Property rights in the two case areas are very rarely acquired through money transactions and since smallholders have only limited capital the creation of a market is not feasible.⁷¹ Property rights to natural resources are too valuable to smallholders to be sold because such a sale would in the long run lead to ruin.⁷² Although markets can only be as successful as the legal and regulatory institutional framework allows it to be⁷³ it cannot be taken for granted that there is supply and demand waiting to be matched and a market to be “liberated”.

The analysis of the case areas give at hand that traditional communal property rights systems and livelihood strategies are continuously evaluated and kept as long as they are considered to be the most efficient by the majority. These societies are neither characterised by democratic majority vote, nor by elite rule. The elites are favoured and premiering their own interests, but they are also dependent on the majority and cannot ignore or over-rule its needs and demands and, hence, institutional change is not lead by individual or group interest. The continuation is manifested in ideology that confesses traditional rationales for holding property and in the security offered by path dependency that has not yet become a hinder to change. Search for lowering transaction costs takes place within existing institutions, not through attempts to create new property rights regimes.

Sometimes smallholders' security strategies clash with formal legislation and regulations resulting in conflict and rule breaking behaviour. The dual judicial system was one of the most significant legacies of the British Indirect Rule system in sub-Saharan Africa. The formalisation of customary practices took diverse forms in Meru and Kgatlang, forms that have had effects on how customary property rights have been viewed and treated by the post-independence government. Because Customary and not Statutory Law was in operation in the Native Reserves, the match between formal and informal property rights institutions was not a severe problem in the tribal areas during the colonial era. The picture changed somewhat after independence when

⁷¹ Carlsson (2003) pp. 175-176, Oageng (1999).

⁷² Lipton (1968).

⁷³ Kemper (2001), Perry et al. (1997).

the two areas developed in contrasting directions. In a comparison it can be established that Kgatleng has been more successful than Meru in continuing the match between formal and informal institutions, the reasons being a better starting position with a united Native Reserve with no elements of Crown Land and the incorporation of recognized customary rights into Statutory Law and government policy. As the Tanzanian government has not managed to reach into Meru customary rights have stayed strong in the local setting, but obscure in Statutory Law and government policies.

This has mostly affected the security experienced by the estate holders holding private rights alien to the African communities. Since there is neither a strengthening of state enforcement nor an adaptation of Statutory Law to Customary Law and informal institutions it is likely that the illegally expropriated of private furrows will continue. Yet another case of rule-breaking behaviour can be detected in the Meru area, namely water theft. The extraction from rivers can exceed the amount stipulated in the water right and this leads to conflicts between head and tail end water right holders. In the drier lowland area, where the demand for water is high due to population growth and intensification of farming methods the furrows cannot make supply meet demand in the dry season and members of the same water committee then steal allocations from one another. This is not due to bad match between formal and informal rules, but a question of certain smallholders choosing to be offenders after having calculated benefits, risks, and costs involved. Furrow committees are so far opting for a stronger enforcement of existing rules instead of exclusion trying to keep the communal property system open to all smallholders who are interested. In the case of Kgatleng where stray cattle are being watered for free, the behaviour of the free-riders is accepted and considered to be a new way of sharing water resources caused by the increasing animal population and closeness between boreholes and not a breaking of rules. Conflict between water users has had a peripheral role in explaining motives for institutional change, although unobtrusive conflicts are common.

7. Concluding remarks

Four main arguments have been put forward in this paper. First, it is claimed that existing institutions develop and prevail because they are compatible with the socio-economic structure and that incentives created by these structures in turn dictate livelihood strategies. Hence, institutions and livelihood strategies are embedded in the structure and a

multi level analysis is required. Second, institutions governing water resources in the two case areas have experienced some change and have adjusted to new technology and new factors, but the socio-economic structure has stayed pre-modern and therefore communal property rights institutions have shown continuity and strength. Third, smallholders in pre-modern societies are primarily in search of security, which is obtained by accessing multiple water sources and spreading risks, investing in and relying on social networks to complement *de jure* rights, and upholding the existing institutional structure by complying with tradition. Fourth, successful change in property rights institutions, in effect privatization of natural resources, can only be successful if there is change in the pre-modern socio-economic structure and contemporary pre-modern sub-Saharan African societies have the potential for such a change. The policy implications must be that as long as there is no structural change any top down privatization that collide with existing property rights institutions have negligible, or even negative results.

Being able to change, however, does not necessarily mean that change is always the only road forward. An intricate question arises whether the communal property rights systems can also prevail in the midst of a transformation and even play a positive part in such a process. Human rights aspects of water and its strong position as a free public good within Customary Law and practices have caused institutions governing water resources to be conservative. They recognise the economic value of water, but do not treat it as an economic good. A fifth argument could be put forward that water is such a unique resource that in the midst of privatization of other natural resources communal property rights to water still has a role to play in rural sub-Saharan Africa even during and after an agrarian transformation. Accessing water freely or at least cheaply could give the necessary security needed for risking the leap to specialization.

In the case of Kgatleng agricultural transformation is far away and it seems most likely that Botswana within a foreseeable future will stay a dual economy with a modernizing urban sector thriving on diamond revenues and pre-modern rural areas. In such a society communal property rights to agrarian resources prevail because the socio-economic structure is unaffected. In Meru, on the contrary, an infant transformation can be detected with new technology, change in relative factor price, market extension, commencing *de facto* privatization of land, and specialization in production. Evidence points to the fact that the consequent increased pressure on and augmented value of water resources has been resolved primarily through stricter regulations and a

general diversification of incomes rather than through a discontinuous change in property rights. The prevalence of communal property rights has not been a hinder to change and it is predicted that in the future these institutions can stay on as enablers and not constraints as they continue to offer security. Water for irrigation could be concentrated in the hands of the few instead of the many not through a privatization of water, but of land and a general de-agrarization. Furrow committees will then become more exclusive groups, but water for agrarian purposes will continue to be controlled by communal property rights institutions while water for domestic use will be subsidised by the community or the state.

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Department of Economic History, Lund University

Postal address: P.O. Box 7083, S-220 07 Lund, Sweden

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