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**BITING THE BULLET: HOW TO SECURE ACCESS TO DRYLANDS  
RESOURCES FOR MULTIPLE USERS**

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## ACKNOWLEDGMENTS

In February of 2005, the UNDP Drylands Development Center (UNDP-DDC), the CGIAR Systemwide Program on Collective Action and Property Rights (CAPRI) and the International Land Coalition (ILC) jointly hosted an expert consultation to explore the challenges of designing and implementing a drylands tenure reform program (see <http://www.undp.org/drylands/lt-workshop-05.htm>). This workshop was followed by an e-conference on the same topic organized with FRAME (see <http://www.frameweb.org/>).

Securing tenure was identified by a wide range of participants from different parts of the world as a prime objective of any drylands tenure reform.<sup>1</sup>

We want to thank our co-organizers and the participants of these events for pointing us in the right direction.

A special thanks also to Regina Birner, Marilyn Hoskins, and Ruth Meinzen-Dick for their valuable comments and suggestions. We appreciate Amanda Segovia's expeditious efforts in accessing reference materials from various libraries.

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<sup>1</sup> Other crucial issues facing drylands resource users today that were identified by workshop participants include market access, support from state structures, unfettered participation of local actors, global climate change, the spread of small arms and ammunition, refugees and internally displaced people associated to a large number of violent conflicts, and the realities of local and national power structures.

## ABSTRACT

Close to one billion people worldwide depend directly upon the drylands for their livelihoods. Because of their climatic conditions and political and economic marginalization drylands also have some of the highest incidents of poverty. Pastoral and sedentary production systems coexist in these areas and both very often use common property arrangements to manage access and use of natural resources. Despite their history of complementary interactions, pastoralists and sedentary farmers are increasingly faced with conflicting claims over land and other natural resources. Past policy interventions and existing regulatory frameworks have not been able to offer lasting solutions to the problems related to land tenure and resource access; problems between the multiple and differentiated drylands resource users, as part of broader concerns over resource degradation and the political and economic marginalization of the drylands.

This paper discusses enduring tension in efforts to secure rights in drylands. On the one hand are researchers and practitioners who advocate for statutory law as the most effective guarantor of rights, especially of group rights. On the other side are those who underscore the complexity of customary rights and the need to account for dynamism and flexibility in drylands environments in particular. It explores innovative examples of dealing with secure access to resources and comes to the conclusion that process, rather than content, should be the focus of policy makers. Any attempt to secure access for multiple users in variable drylands environments should identify frameworks for conflict resolution, in a negotiated manner, crafting rules from the ground upwards, in addition to a more generalized or generic identification of rights. Elite capture and exclusion of women and young people continue to pose significant challenges in such decentralized processes. For rights to be meaningfully secured there is need to identify the nature and sources of threats that create insecurities.

**Keywords:** Drylands, secure access, land tenure, customary rights, natural resources, multiple users, Africa

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# **BITING THE BULLET: HOW TO SECURE ACCESS TO DRYLANDS RESOURCES FOR MULTIPLE USERS**

Esther Mwangi and Stephan Dohrn

## **1. INTRODUCTION**

This review explores how tenure security can be enhanced for drylands resource users. The past decade has seen a renewed interest among donors, researchers and practitioners in drylands development. Drylands, which comprise the arid, semi-arid, and dry sub-humid regions of the world, cover more than 40 percent of the earth's land surface, supporting almost 20 percent of the human population (Thomas et al. 2002). In Africa alone, drylands (excluding deserts) cover 40 percent of the land surface and support an equal proportion of Africa's inhabitants (Anderson et al. 2004). Drylands contain most of the poorest countries in sub-Saharan Africa (Mortimore 1998): 12 of the world's 20 most disadvantaged countries are in dryland Africa. The world's poorest women are located in Africa's drylands and it is the women who produce, manage and market most of the food for their families and societies, and who work directly with natural resources.<sup>2</sup>

While the contribution of drylands and their populations to national and global economies and values are understated, their potentials for livestock development, wildlife and tourism, mining, solar and wind energy, etc. are clearly recognized (Anderson et al. 2002). But the populations living in these 'marginal' areas continue to face declining social and economic conditions (McCarthy and Swallow 1999). The donor-supported,

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<sup>2</sup> See statement of U.N. Secretary General Kofi Annan in observance of the World Day to Combat Desertification and Drought, June 17, 2005.

national government-led technical solutions of the 1960s and 70s such as range rehabilitation, water development, de-stocking, veterinary programs and livestock marketing interventions have failed (Sandford 1983). These were primarily targeted at subsistence pastoral production systems with the objective of increasing productivity and controlling environmental degradation. Although most of these projects failed to achieve their intended goals, many of them had positive spin-offs for local people. The logic of local people might not be compatible with that of development projects and those who promote them.<sup>3</sup>

Similarly, the state-led institutional interventions of the 1980s that focused either on nationalizing and/or privatizing drylands resources have been consistently described by scholars and practitioners as ‘dismal failures’. Yet again these were targeted primarily at pastoralists. The outcomes anticipated by these top-down interventions often perceived as the silver bullets to solve all problems were not realized: pastoralists continue to ‘overstock’ beyond what external experts considered the rangelands’ ‘carrying capacities’ and they continue to pursue, albeit at increasingly smaller scales, extensive livestock systems, shifting herds between wet and dry season pastures. Furthermore, they have sustained institutions that support their production systems, which hardly bear much resemblance to the state or market dichotomies that were imposed upon them. The silver bullet of land tenure reform that was intended to set in motion livestock destocking, increased market offtake and rangeland conservation missed its target.

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<sup>3</sup> A project that installed a pastoral zone in Kéné Dougou Province in Burkina Faso, for example, attracted between 1975 and 1983 pastoralists from neighboring provinces not because they wanted to become sedentarized and follow the principles of group ranching but because the financial and technical support of the project allowed them to save their livestock after droughts (Nelen et al., 2004). The question therefore becomes whose criteria are set for the measurement of success and whose objectives are followed. A number of examples for the lack of understanding of local knowledge and of the logic of pastoral management systems can be found in Niamir-Fuller (1990).

These events have been captured in a substantial, and still growing, literature.<sup>4</sup> Innovative ways of thinking (and doing) in the drylands are now emerging. The drylands are increasingly recognized as the domain of multiple groups pursuing diverse production strategies (pastoralism, agropastoralism, cultivation). Multiple institutional forms have evolved from within to sustain the complementarities and manage the often conflicting strategies even as external influences from states and markets pose increasing challenges. The focus among researchers, donors and practitioners appears to have shifted. Local institutions and solutions finally do seem to get the needed attention. Tenure and access options of differentiated local actors to drylands resources and opportunities do matter. Securing these options in a highly variable environment now matters the most.

Because the drylands are characterized by a diverse set of users (pastoralists, cultivators, hunter-gatherers, refugees, etc), and variable and erratic climatic conditions, flexibility to accommodate these diverse uses at different times is crucial. Yet each of these users must be assured of appropriate and effective access to sustain their diverse livelihoods strategies. Enhancing tenure security thus presents a unique dilemma to the drylands where variability, flexibility and multiple uses are the defining characteristics.

This paper first presents a brief account of the features of drylands focusing on the complexities of economy, politics and environment that have structured current processes in the drylands. It draws out the rediscovered and increasingly touted notions of variability, flexibility, and opportunism that underpin production systems in the drylands and that are not conducive to one-size-fits-all or silver bullet solutions. This section also

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<sup>4</sup> See, for example, IIED, 2002; Lund, 2002, 2001, 1999; Salih et al., 2001; Toulmin and Quan, 2000; Niamir-Fuller, 1999; Anderson and Broch-Due, 1999; Lane and Moorehead, 1994; Mortimore, 1998; Basset and Crummy, 1993; Downs and Reyna, 1988; Baxter and Hogg, 1987; Horowitz and Little, 1987; Sanderson, 1983

introduces the two main groups of resource users (pastoralists on the one hand, and cultivators or farmers on the other) and their production systems focusing on their relations and interaction in a shared space.

The second section develops the elements of a drylands tenure reform program appropriate to secure access to resources for multiple users and uses. It draws from innovative examples in different settings, including urban settings, in an attempt to explore how secure tenure can be promoted and enhanced for drylands resource users. Although not providing final answers to these questions the evidence discussed suggests that in multi-user or multi-use environments such as the drylands, the focus of tenure regulation needs to shift from *substance*, i.e. the allocation of rights themselves, to *process*, i.e. rules and mechanisms for regulating access and use among multiple interests. Nonetheless the determination of both substance and content must originate from the resource users.

## **2. THE DRYLANDS: ENVIRONMENT, PRODUCTION STRATEGIES AND RESOURCE TENURES**

Most of the world's drylands share similarities of low and variable rainfall (which introduces risk into life-supporting systems), fairly high social and natural diversity and striking consistency in the use of common property arrangements for resource management and access (Mortimore 1998). Using Africa's drylands as an example, this section highlights key features of drylands environments, the diverse strategies of drylands resource users, and principle resource tenure issues, with which individuals and groups are confronted.



## DRYLANDS ENVIRONMENTS

Large proportion of Africa are drylands, receiving less than 1000 mm of rainfall per year in less than 180 days, the remaining months being relatively or absolutely dry (Mortimore 1998). High temperatures during the rainy season cause much of the rainfall to be lost in evaporation; and the high intensity of storms ensures that much of it runs off in floods. For securing human livelihoods the two dominant characteristics of drylands are aridity and variability. In terms of aridity, many places normally have little or no rain for six months or more. Consequently species are adapted to drought stress, with plant and animal biomass production heavily concentrated in the wet season. Not all areas, however, are limited by water. There are pockets of wetlands in drylands such as the Fadamas of Northern Nigeria, the Dambos of Zambia and Zimbabwe, river flood plains or margins of lakes (Hulme 2001; Mortimore 1998). These offer valuable dry season grazing, flood recession farming, or irrigation opportunities.

Apart from being low and seasonal, rainfall is also variable, both interannually and seasonally. Variability introduces risk into plant and animal production. Droughts, however defined, are a characteristic feature of this environment. Seasonality constrains pastoral specialists to move herds. Rainfall variability is at the root of uncertainty or risk in dryland ecosystems. The mobile systems of livestock production seem to provide an efficient way of exploiting such environments. Rainfall variability also poses critical challenges for farming communities in the semi-arid zones, and plays an important part in defining the technological challenges which agriculture must meet if communities are to support themselves from the land.

This focus on climatic variability departs from earlier successional models of range ecosystem function which assumed a notional equilibrium between stocking

densities and vegetation productivity. *Carrying capacity, land degradation, over-stocking* and even *desertification* were terms associated with traditional African rangeland management systems, and the objective of intervention was to limit stocking densities in tune with plant biomass. The usefulness of these views of rangeland function have been widely discredited (Behnke et al. 1993; Behnke 1994; Niamir-Fuller 1999; 1995) and are increasingly abandoned for more holistic models that reflect the realities of African rangelands (and even Asian rangelands see Fernandez-Gimenez 2002; Sneath 1993; 1998; Banks 2003; Ho 2000). While the new rangeland ecology may yet call for greater empirical testing, it more closely reflects the opportunistic strategies of mobile herders constrained by erratic seasonal and interannual rainfall. Mobility allows herders to exploit multiple niches distributed across space, at different times to depress fluctuations in production (Kamara et al. 2004; Kamara 1999; Goodhue and McCarthy 1999). This is supported by a number of studies (Scoones 1994; Swallow 1994; Toulmin 1995), which found that the boundaries of grazing areas or of transhumance corridors as well as group membership are ill-defined or “fuzzy”. This fuzziness is believed to be a positive factor in the functioning of the pastoral systems. It is crucial in ensuring access to critical resources such as pastures and water during times of scarcity. Goodhue and McCarthy (1999) for example demonstrate that traditional access systems with their fuzzy nature produce more stable and higher returns than well-defined private property rights. However, the need for fuzzy spatial and social boundaries in highly variable environments is at odds with the requirement for social and spatial exclusion that scholars of common property have indicated to be a prime consideration for sustainable resource management among rights-holding groups. Nonetheless, there is an urgent need for

translating these rediscovered ideas (like fuzziness, variability, stability, diversity, and vulnerability) into viable policies and programs (Batterbury and Warren 2001).

## DRYLANDS RESOURCE USERS

### *Pastoralists in the drylands*

Pastoralism is a dominant strategy for the use of Africa's drylands. In a recent review of policy lessons from various studies on pastoralism in eastern Africa and Asia, Fratkin and Mearns (2003) summarize the evolution of policy. Earlier development policy for pastoral regions held one view in common: that rangelands were suffering from degradation caused by overgrazing of domestic animals, due to animal increase. Though available, technological options to combat this problem were seen as constrained by pastoralists' traditional and social systems, in particular the tendency for communal tenures and livestock mobility. Individualization<sup>5</sup> and controlled stocking were the preferred solutions. These solutions were implemented by government agencies with support from the World Bank and bilateral agencies. They failed: Degradation was not halted, livestock numbers did not decline and individualization resulted in loss of rights for vulnerable groups and individuals. It increased stratification and inequalities in pastoral societies. Individualization weakened established norms and rules for the regulation of pasture use, and opened up customary land to non-traditional users who were not tied by those customary norms and rules.

As indicated in the previous section, the relevance of this conventional thinking that was informed by notions of ecosystem equilibrium, pastoral irrationality and

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<sup>5</sup>. A number of people (e.g. Leach and Mearns 1996) use the term privatization to include private ownership by groups as well as by individuals. This paper uses individualization instead of privatization to avoid ambiguity

Hardin's (1968) tragedy of the commons thesis now stands challenged. A cross section of scholars have demonstrated that pastoral strategies of herd diversity, flexibility, mobility are rational and crucial for survival in erratic environments (Lamprey and Reid 2004; Niamir-Fuller 1998,1999a; Scoones 1994; Behnke and Kerven 1993; McCabe 1990; Westoby et al 1989; Ellis and Swift 1988; Baxter and Hogg 1987)

The review by Fratkin and Mearns (2003) point to the following as possible solutions to increased tenure insecurities faced by pastoralists in eastern Africa:

1. Herders' rights to resources must be guaranteed by law in different forms of collective tenures;
2. A recognition of customary tenures;
3. The development of appropriate forms of conflict mediation and resolution to support mobility and opportunism; and
4. Devolution of power to appropriate authorities at different scales, particularly to empower herder groups to create and re-create rules, within prescribed limits, as they learn.

Sahelian pastoralists have not been spared the disruptions of state intervention (Le Meur 2002; Thebaud 2002; Engberg-Pedersen 2001; Thebaud and Batterbury 2001; Ngaido 1999). Another strategy that was pursued in many parts of Northern Africa and the Middle East was the nationalization of drylands. Governments were assumed better equipped to manage range resources that were rapidly declining due to agricultural encroachment, increasing human and livestock populations and subsequent individualization. Although some successes with co-management can be observed, nationalization also led to widespread land appropriation, vegetation decline and shrinkage of grazing resources, as well as conflicts between the state and pastoral communities because of ill defined resource rights (Ngaido 2002).

Because mobility and management of common pool resources were not addressed in official rangeland management systems, herders could not and cannot secure formal rights to pastures and resources (Thebaud and Batterbury 2001). In the Djerma region of SW Niger for example, Fulani agropastoralists do not have land rights despite 40 years of cultivation, because herding is still not recognized as a legitimate form of land use relative to farming. Pastoral lands are usually vested in the state, which allocates and defines use rights, and penalizes transgressions. This creates considerable uncertainty for pastoralists.

In the Sahelian drylands resource tenure and access issues also occur over access to water resources. While water access has been a subject of competition among pastoral groups, traditional water wells have less been the object of contention compared to the recently state-constructed cement-lined wells (Thebaud and Batterbury 2001). In Eastern Niger, for example, the Fulbe retain priority rights to traditional wells, but do not establish exclusive rights. They allow outsiders rights to water based on principles of reciprocity with rules regulating length of visit, quantity of fodder resources to be consumed, and health status of animals. Outsiders that are unable to reciprocate must compensate for water access in other ways. However, a lack of established rules around public wells and boreholes in the Dila region has created an arena for forceful conflict between Fulani and other groups.

In sum, in the Sahel, the use of pastoral resources is based on a complex set of temporary or more permanent claims on pastures, wells and other resources (salt licks, for example), and on underlying principles of flexibility and reciprocity (Thebaud and Batterbury 2001). Pastoralists here are unlikely to favor exclusive rights; for them

territorial boundaries should remain fuzzy and negotiation over access should remain a permanent process in which individuals or user groups re-evaluate their share of pastoral resources and their particular level of control over strategic resources<sup>6</sup>. Bruce and Mearns (2002) and Batterbury and Warren (2001) reiterate the importance of recognizing common property regimes that are based on mobility, and a concomitant requirement for more forums for negotiation (Bruce and Mearns 2002; Batterbury and Warren 2001).

*Cultivators and Farmers in the Drylands*

The production environment for drylands cultivators is one of high variability. Drylands farmers are mostly small holders, often on low potential land and heavily reliant on rainfed farming systems producing for local consumption and some markets. Like pastoralists, they adopt flexible strategies to cope with the uncertain conditions in which they operate. For example, crops are planted later and later for returns towards the onset of the dry season, a time when farmers had traditionally released farmland and crop stubble to livestock grazing. In addition, although drylands cultivators are usually located close to water resources (rivers, wells, reservoirs), they often scatter their plots to maximize the benefits of different production niches within the drylands landscape.

Thus both pastoral and agro-pastoral and farming systems exist in the drylands, often engaging similar opportunistic strategies to address similar constraints imposed by the risky environments that they share. In the Sahel, for example, strong interactions developed between agriculturalists and pastoralists over time. While pastoralism dominates in a large part of the Northern zones of the Sahel, the entire southern and less

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<sup>6</sup> Whereas mobility is crucial as a management strategy for pastoralists to cope with risk, research has also shown that levels of investment to improve pasture management are lower where property rights are not clearly defined (Goodhue, McCarthy, and Di Gregorio, 2005). These findings indicate that there are trade-offs between flexible access, and thus less security and investment in pasture management.

arid zone is given to agriculture. This southern zone has for a long time received transhumant pastoralists from the north and has sheltered more or less sedentary agro-pastoralists whose lands interpenetrate with those of peasant villages. Starting from the 1950s-60s, following a slight increase in precipitation, these reciprocal arrangements are on the decline as farming communities diversify into livestock ownership and pastoralists began to engage in farming (Raynaut 2001; Thebaud and Batterbury 2001; Hoffman 2004). By keeping more livestock than in the past, farmers are less dependent on the pastoral provision of animals and animal products (Hoffman 2004). At the same time imports of cheap meat has reduced farmers' dependence on local meat, and are undermining the ability of herders to sell the produce.<sup>7</sup> Also, because tenure rules favor cropland above rangeland, the farmers have increased private pressure on resources by encroaching on common property rangelands, and by preventing others from using seasonal common property resources. Consequently, pastoralists are confronted with a severe decline in rangeland. In Northern Nigeria for example Fulani pastoralists are faced with up to 8-10 percent decline in their rangelands following the appropriations by Hausa farmers and Fulani agropastoralists (Hof 2001 cited in Hoffman 2004). Similar processes of range enclosure are also occurring in Niger (Vedeld 1996) and in Senegal (Thebaud et al. 1995).

In some areas of Nigeria, though conflict may have escalated to violent proportions, villages and communities are developing internal rules of conflict resolution with regard to access to common resources. Each of the local governments has established a Farmer–Fulani Dispute Resolution Committee for the prevention or resolution of disputes between farmers and herders (Hoffman 2004). Stubble grazing and

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<sup>7</sup> Marilyn Hoskins, Personal Communication, August, 2005.

manure arrangements between herders and farmers are being revitalized and cooperating between farmers and herders is increasing. However, this is more effective at the level of contracting individuals.

In other parts of Africa traditional systems of negotiation and conflict resolution continue to function, as is the case of the Nuer of Sudan, for example (Duany 1999). Although the northern government disbanded earlier traditional authority structures for conflict resolution, agents with limited authority still continue to resolve conflict between the groups using resources held in common. In the early 1990s a violent conflict between the two largest Nuer groups arose over the rights to commonly used grazing and fishing grounds. A conference based on the traditional governing principles of the Nuer was organized and led to an agreement between the two groups. Such mechanisms exist in many other parts of Africa but are increasingly challenged by environmental change, migration, diversification, state intervention and conflicts.

Raynaut (2001:17-18, emphasis added) summarizes the situation of drylands users, their interactions and relations to land and natural resources most cogently:

“natural resource use in the drylands occurs within a shared space, which is subject to diverse strategies of control and appropriation. Nothing can be grasped about the current crisis without consideration of the rivalries that confront (and the alliances that unite) the many competitors and partners on the environmental scene. The notion of negotiation is essential in the setting up of “sustainable” relations between the different types of users and the environment.”

### **3. ESSENTIAL ELEMENTS OF DRYLANDS TENURE REFORM**

The preceding review of drylands tenure issues in parts of Africa seems to suggest some convergence on the range of feasible solutions for drylands tenure options. First,



there seems to be a recognition that drylands resources must be secured for drylands users against some form of threat, often external and that some legal solution at multiple scales that is premised on local customary rules may be appropriate and effective in protecting group rights. This solution is informed by earlier top-down, state-led approaches of individualization or nationalization that not only undermined existing authority systems regulating resource access, but also opened up opportunities for non-customary users and immigrants to appropriate resources, even as some customary users were privileged over others (e.g. cultivators over pastoralists).

However, in seeking legal solutions for recognition and strengthening of group rights, there is increasing empirical evidence that threats to tenure security may also originate from within the groups themselves. For instance, while the initial enclosure of the Maasai range in Kenya was motivated by a drive to secure Maasai land claims against unsanctioned appropriations by state and influential non-Maasai, the more recent individualization of group resources is partly driven by individuals' need to secure their and their families' claims against appropriation by influential individuals from within the community (Mwangi 2005a; b).

Even though property rights might be vested in groups as corporate entities, the dilemma remains of how resources are to be allocated, accessed, used and managed within groups themselves. The rights of women are particularly vulnerable during such instances. Recent research in Burkina Faso, Niger and Ethiopia (McCarthy et al. 2004) suggests that where there is sustained intra-group cooperation in natural resources management, the likelihood of individual appropriation is greatly diminished. In a broad review of new challenges for natural resources management and land use policy in

developing countries Bruce and Mearns (2002) suggest that protection for communities against land grabs by outsiders does not automatically protect individuals and households against abuses from within.

Second, the previous review also reveals a strong support among researchers and practitioners for strengthening negotiation and conflict management amongst and across users of drylands resources. The precise nature of how recognition for customary law can be inscribed into national systems, or of how conflict management and negotiation systems can be strengthened and sustained is yet to be fully understood. While the clamor for conflict management or negotiation might be justifiably rooted in the search for secure access among and between groups of multiple users, it remains an ambiguous and dangerously apolitical notion. Peters (2002) encourages sensitivity to the limits of negotiability. Once differential power is factored into the analysis, negotiation may be yet another tool in the hands of the privileged to manipulate outcomes. In addition, strengthening institutions for the mediation of conflicting interests is not a feasible solution in circumstances where property regimes have developed under conditions of acute discrimination (Cousins 2002).

Not all scholars advocate codification and adaptation of customary rules into statutory systems. A growing number in Africa and the West argue that because access to land and related resources in Africa is a function of human relationships, which are conditional and dynamic, 'western' notions of security are not entirely relevant. In fact the bewildering complexity of customary rights, often multiple, overlapping, temporary or permanent, deriving legitimacy from multiple authorities, depending on the function of the rights, do not lend themselves to easy codification (Juul and Lund 2002; Breusers

2001; Vedeld 1996; Berry 1989; 1993; Shipton and Goheen 1992; Bromley 1989; Haugerud 1989; Okoth-Ogendo 1989). The danger lies not only in bounding a fluid set of principles, but also in the risk of failing to capture the rights of 'secondary' users. Even the term 'custom' is itself subject to contestation and may not be entirely local (Shipton and Goheen 1992). The problem of who decides who are the legitimate resource claimants and who has the right to decide still remains (Leach et al. 1999). In any case the introduction of substantive laws and rules at national level is no guarantee for change of status, positions, behavior of individuals, and enforcement practices at local levels (Vedeld 1996). Community norms remain important, even where custom begins to change in response to economic pressures (Firmin-Sellers and Sellers 1999). Though the policy prescription from this group of scholars is far from clear as resource tenures in Africa are a moving target, their objections compel a nuanced analysis of the realities of resource tenures and the risks of oversimplification, particularly if titling is considered as one of the ways of increasing tenure security. Lavigne-Dellville et al. (2002) suggest that the best solution would be to harmonize the different legal regimes, retaining the dynamic flexibility of local systems while building up a body of regulations. This can be done by making rights more secure by offering a range of solutions, making land tenure management a more local matter, and recognizing the legitimacy of existing rights. Ultimately, they argue that the only way forward is to achieve at least some degree of reconciliation between *legitimacy*, *legality* and actual *practice*.

In this formulation, an assessment of the principles underpinning the constitution of order in customary and local systems, including judgments of fairness based on local custom would be helpful (Vedeld 1996). Law makers would then introduce rules of

procedure (i.e. procedural law), as against rules of rights (i.e. substantive law) (Vedeld 1996). The former would specify an enabling framework in which conflicting and concerned parties could legitimately put forward their claims to a certain resource. This would include the identification and building of administrative or legal institutions which would handle such claims, the principles for judging between opposing claims, as well as procedures for enforcement. South Africa is currently struggling with this approach (Cousins 2002). Moreover, a shift from substantive to procedural law therefore has to go along with the separation of *access* (rights, ‘powers’) from *control* (authority) (Okoth-Ogendo 1989) because structures of authority that may be established to guarantee rights or mediate conflicts cannot at the same time be the source of those rights as this opens the doors for abuse and arbitrary allocation of rights. Also work undertaken on the processes of water rights reforms (Bruns, Ringler, and Meinzen-Dick, forthcoming) indicates that timing and sequencing of reform efforts are crucial to success. Bruns, Ringler, and Meinzen-Dick (forthcoming) argue that to have legitimacy rights should be allocated to users after forums to negotiate agreements have been established and rules agreed upon that govern the process of rights allocation. Looking at the interface between customary and statutory (or formal) law, Burchi (2005) points out that reconciling those two legal systems requires time and a transition period, in which mechanisms are established that seek to prevent confrontation and settle disputes.

Quite clearly, scholars have identified different ways of securing local rights by multiple resource users in the drylands. These solutions entail three fundamental elements: i) legal recognition of local rules, norms and principles granting legitimacy and increasing the likelihood of enforcement and sustainability; ii) rules originate from local

levels to capture the range of rights and issues; and iii) processes of negotiation and conflict resolution are given a premium.

This conversation may also benefit from an explicit framework and/or description of what constitutes security (and insecurity) of access under a broad range of settings, for different categories of users, or different resources at different times and scales.

Seeking answers to the fundamental question of what security means, for whom, against what threats, in a multiple user setting, may well open up a range of useful policy options for securing land access rights. Unpacking tenure insecurity might illuminate how conflict mediation can be structured, but also provide clues on how powerful interests may be countered for the benefit of a wider segment of society. The notion of tenure niches (Bruce 2000/1) and the institutional analysis framework that considers actors, their incentives and resources (Ostrom 2005) is useful for such an exploration.

As a starting point, resource niches within the drylands system may determine the types of threats that may occur. For example, resource niches of high economic value (e.g. pockets of high agricultural potential, underlying minerals, or wildlife conservation value), the state and other powerful external actors may set in motion ways of appropriating rights away from customary claimants. In other cases migrant communities long accommodated by host communities may, for various reasons, demand more permanent rights. Or, as is common in many pastoral areas, with population increase demands on resources jointly appropriated/shared with neighboring communities escalate, sometimes leading to violent conflict. Even within the household, a male household head may sell off parts of his family's land claims without notifying his wife or children. These examples represent different levels of threats, from within and from

without, which local communities may or may not be equipped to deal with, depending on the local, institutional mechanisms they have evolved and the strength of these mechanisms relative to existing alternatives, the resources and experience they may have to thwart external threat. Because these these threats are different, with different implications for the *bundles of rights* for claimants, the process of securing claims may look different for each. While some threats might require legal recognition at higher levels, others may not require the same level of intervention. Instead, more localized interventions may be designed to maintain flexible access to local resources by affected parties, thus avoiding blanket codification programs.

Another important set of questions highlights the importance of local strategies to counter threats. How do people counter threats? What are salient, positive reactions as ways of securing rights? Are there efforts from within communities to strengthen existing or develop new collective management systems, and what are those efforts? Answers to these questions will lead to a better understanding of the ways and means to enforce equity considerations in the drylands.

The next section outlines a series of tenure innovations that are currently being undertaken (or have been undertaken) in different parts of Africa in the past decade.

#### **4. TENURE INNOVATIONS**

This section presents a series of recent innovations (that move away from formal titling programs) primarily in rural West Africa that are intended to secure rights. Two examples of individual and collective certification rights in urban areas are also provided. The rural West African examples are abstracted from Lavigne-Delville et al. 2002, while

the urban examples are drawn from Payne 2002. While this is not an exclusive list it gives a general idea of the issues and questions that arise when dealing with land tenure systems in the drylands.

### *Gestion des Terroirs Villageois*

The aim of this program is to transfer of control of land and resources to communities, defined as territories. Informal decision-making powers are vested in representative village committees, to whom all land tenure concerns are directed. This is an approach that was adopted in West African countries from the mid-1980s and is well developed in Burkina Faso. Other countries that adopted the program include Senegal, Mali, Cote d'Ivoire and Niger. Premised on the notion that uncertain land rights have exacerbated land degradation, the program also emphasizes a redefinition of land rights and promotion of sustainable land management through the adoption of soil erosion control and soil fertility enhancement techniques. Because distinct spatial areas end up being controlled by village councils, the program is found to be most effective with nucleated agricultural communities at the expense of seasonally migrant pastoralists. It overlooks overlapping use by differentiated users (e.g. mobile or sedentary pastoralists) and that resources are often controlled by multiple and overlapping authorities. In addition, it does not take into account the possibility that economic and social activities of both pastoral population and settled villagers frequently reach beyond the boundaries of village territories. It is externally initiated, capital intensive, and unsuited to complex landscapes.

*Codification: integrating local rules into national legislation*

By investigating local practice, pastoralism and tree tenure, this innovation identifies local rules and practices and integrates them into legal texts, for example Niger's Code Rurale. However, local practices are very diverse, dependent on local social and political history. Formalizing custom simplifies flexible and variable rules because rules are often meaningful only in relation to the institutions that define them. Failing to take diversity into account compromises legitimacy.

*Rural Land Tenure Plans*

This innovation involves the identification and mapping of all existing, locally recognized rights, without investigating their origins. It takes stock of all existing rights that have been agreed upon by parties at local levels. Legislative reform is then conducted to define land tenure categories, and to give legal status to local rights. Land tenure certificates are issued and may ultimately be converted to private title. This was started in the early 1990s in Cote d'Ivoire and extended to Guinea, Benin and Burkina Faso. Rural land tenure plans have faced the same difficulties as Gestion des Terroirs Villageois intervention: the problem of describing and mapping overlapping rights. Consequently often only land manager and farmers are considered rights holders under this approach, neglecting secondary rights.

This is aimed at encouraging sustainable land management and to reduce the pressure for land clearance. Madagascar has implemented an innovative approach starting in 1996, where exclusive rights are granted to local communities, with the aim of securing local management of common property. This involves drawing contracts between community, local council and state thus allowing joint management. It also



allows for the systematization of local negotiating procedures. However, the recognition of arrangements by central administration is essential for rules to be guaranteed.

#### *Making land transactions secure*

Tried in Guinea, this arrangement focuses on the procedures by which land rights are transferred. Rights are considered legitimate only if transferred by one who is empowered to do so. It involves the clarification of procedures for drawing and formalizing contracts in situations in which an individual grants all or part of the rights he/she holds over a given plot. While this innovation links local rules and national laws with less rigidity and captures the dynamic aspects of land tenure without claiming to cover all aspects of rights, it introduces a number of complications. For example, what types of transactions will be recognized? What clauses must be present in the contract? Is a written document necessary? What would be the legal status of such agreements?

#### *Land tenure observatories*

Mali has tried developing land tenure observatories are intended to establish the capacity to observe changes in land tenure to facilitate the implementation of a land charter. It involves multidisciplinary groups of researchers located in specific regions contributing detailed knowledge of local situations to the observatories, with the aim of providing support to people involved in land reform. This information is brought together prior to drafting legislation, thus creating an opportunity for establishing dialogue with those taking decisions. However, implementation proved difficult due to lack of leadership from government agencies such as the Ministry of Agriculture, and it was consequently dropped.

### *Concession of the Real Right to Use*

This innovation has been used to legalize settlement on urban public land in Recife and Porto Alegre in Brazil starting in the early 1990s (see Fernandes 2002). Public authorities concede rights to use land by issuing special contracts to individuals or to groups. Contracts vary between 5-10 years; they allow original beneficiaries to sell or rent to third parties as well as to make *inter vivos* transfers, and cannot be easily revoked. While it does not lead to full ownership it provides legal security of tenure to beneficiaries. Gender sensitivity is embraced as certificates are issued under names of both partners. Though generally liable to property tax, variants of the legislation can allow temporary or permanent exemptions. The program generates strong perceptions of security of tenure among beneficiaries. However residents don't have full understanding of the nature, technicalities and implications of the Concession of the Real Right to Use. Moreover, the concessions have faced legal resistance by registering officers on technical grounds.

### *Community Land Trusts*

The aim of community land trusts, adopted in urban Kenya in the early 1990s, is to minimize negative effects of land markets to the poor and to give local communities longer term control over use and future allocation of their land (see Yahya 2002). Committees are established to implement the land trusts at local, district and national levels, and seats are reserved for women on these committees. Members pay annual lease fees and absentee leases are disallowed. Community land trusts are registered under one title but also linked to separate law for registration of associations to ensure collective ownership. Members cannot sell their rights, though they can sell developments on their land, in which case the land trust retains the first right of purchase of any such

development on the land. Kenyan law recognizes individual titles and only very few individuals can be registered as joint owners. In addition officials in the Department of Lands are used to issuing title and are unfamiliar with crafting innovative tenure security mechanisms. Additional difficulties include opposition by youth to allocation of rights to tenants and the reality that some members cannot afford annual membership fees.

This brief review of innovative and experimental approaches indicates that attempts at securing tenures through the adaptation and codification of customary rights confirms the fears of some scholars that such procedures would result in an oversimplification of rights at the local level. Codification programs including rural land tenure plans, which have been implemented in rural areas of Sahelian countries from the mid 1990s, have failed to take diversity of rights, including secondary rights, into account, severely compromising legitimacy. Unlike the urban programs, all are silent on the land rights of women and other marginalized groups. It may well be that codifying customary rights to land also codifies the power differentials that may be embedded within customary systems.<sup>8</sup> Because these codification and other programs in rural West Africa have failed to account for multiple, overlapping rights and diversity of land use, they have created unforeseen conflict. Negotiation and conflict resolution (the current mantra in land and natural resources management) is at best a fuzzy, unimplemented notion in these innovations.

In general the drive towards legal solutions and codification is grounded in the significant threat from external actors such as the state, which either appropriated or

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<sup>8</sup> Conversely, traditional understandings and norms in some West African groups may allow women certain privileges which codification may undo. For example, a woman may have use rights to the land of her family although she has married out of her village and does not live there anymore, hence codification programs might fix the rights of land to the residents in the village, stripping her off her right.

reallocated lands that were originally under customary authority. As indicated in previous sections, it may well be time to reframe the question of tenure security for drylands resource users in order to promote a deeper understanding of the dilemma the drylands are facing. If legal regimes are necessary to guarantee the security of resource rights, at what scale would this be most effective without undermining the nature and content of rights, which are at once multiple and overlapping in time and space? Which rights must be codified and at what scale? Which sets of rights require formal recognition? What tenure options to address external and internal threats to rights and access?

In calling for a focus on accountable, inclusive and transparent procedures for negotiating and arbitrating disputes at local levels some scholars provide an avenue out of the need to record and legalize all manner of rights. Focusing on procedures for negotiation and dispute resolution under a framework in which most or all complements of rights are guaranteed at higher scales will allow for local level negotiations based on local, salient values regarding what is fair and what is equitable.

However, there is need to emphasize the limitations of negotiation processes that were pointed out earlier in this paper. Not only is there a risk of the elite capturing the negotiating process but in some instances negotiation may not be practicable either due to prior injustices or unequal capacities among negotiating parties (FAO 2005; Cousins 2002; Peters 2002). In such cases it is important to establish answers to the following questions: What is the bargaining power of each party? What are the capacities of the actors to negotiate? Who has control over information? What are the rules? How do those rules influence the outcomes in terms of access to resources? Careful answers to these questions may begin to illuminate what conditions limit negotiation by multiple,

differentiated actors at varying levels and scales, and how these limits might be meaningfully reduced by different actors, including state actors. Non governmental organizations have taken a lead role in facilitating negotiations among conflicting communities in West Africa (Moore 2004). The state's theoretical role as the ultimate guarantor of property rights and arbiter of conflicts is fairly clear. Yet in practice the complement of institutions and actors that comprise the state have proved incapable (and perhaps unwilling) to perform this role effectively. Recent attempts at decentralizing authority and functions to local and district levels have remained incomplete, leading to a strengthening of local elites, and increased vulnerability of the already marginalized (Ribot 2004). A system of incentives is required to ensure that central and local institutions are more responsive and accountable to local populations as a whole. Institutional strength of the state is needed for effective mediation, without which there can be no consensus, and no general framework of dynamic relations between the actors in rural development (Paniagua-Ruiz 1996).

The problem of securing rights for users in drylands areas is well reflected in processes of group ranch subdivision in Kenya's Maasailand (Mwangi 2005b). While the creation of group ranches secured the substantive claims of individuals (i.e. men as household heads) in a corporate title, bureaucratic procedures for problem solving and resource allocation within the group ranch did not reflect local norms and decision making protocols. Majority voting replaced consensus-based decision making, while a formally elected committee replaced the council of elders in resource allocation decisions. Indeed the imposition of livestock quotas by the group ranch committee was ineffective as it was at odds with norms that specified livestock as an individual asset that

is subject to control by individual owners. More importantly, the procedural rules that were crafted by government representatives (i.e. the Registrar of Group Ranches and his cohort of Land Adjudication Officers) that would oversee the subdivision process were not enforced by the state at the time of subdivision, even in the face of glaring inequalities in the outcomes of subdivision. The general point of this account of subdivision is to reiterate the need for procedural rules to reflect the needs and practices of local peoples, but also to stress the necessity of state enforcement.

## 5. CONCLUSION

This paper set out to explore how tenure security concerns for multiple uses of drylands resources can be strengthened. A wide range of innovations in both rural and urban settings are currently under experimentation. Many of these are legal reforms that seek to adapt customary and local systems to wider statutory obligations. In the rural setting, dangers of simplifying complexities and the exclusion of secondary and temporary users are key concerns.<sup>9</sup> We have argued for a reexamination of the notion of tenure security as a way out of the *cul de sac* of blanket policies for securing rights at group and individual levels. Local actors themselves are the competent authorities to determine what forms of insecurities exist and what levels of action, drawing from the complement of institutions available, might alleviate these insecurities. Negotiated processes must have meaning in local settings, while elite influence must be confronted in strategic ways.

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<sup>9</sup> This is an ongoing debate also for other resources. For the discussion on water see the papers and proceedings of the African Water Law workshop: <http://www.nri.org/waterlaw/workshop.htm>.

This discussion has focused on Sub-Saharan Africa's drylands with some examples from the Middle East and Northern Africa. But similar issues are pertinent in Asia and other parts of the world. Fernandez-Gimenez (2002) and Fratkins and Mearns (2003) have identified similar paradoxes in the rangelands of Mongolia, while Sneath (1993; 1998) and Banks (2004) have done so in China. There is a broad appreciation of the need (and urgency) to secure tenures in highly variable environments for its various multiple users. Best practices for achieving this enormous task will unfold with time, but also with learning from other similarly mobile resources. In water reform for instance, the introduction of simple rules instead of rushing to register substantive rights has been found to effectively serve the needs of multiple users (Steenbergen and Shah 2003). Here, reconstituting governance for water use and management comprises a whole set of interrelated, sequenced activities and obligations at constitutional, collective choice and operational levels (Bruns, Ringler, and Meinzen-Dick 2005). This work also shows that efforts to reform rights systems may yield little benefit if pushed too soon, too quickly, or without appropriate synchronization between different components of institutional change but that they will be more effective if applied with realistic patience, timing that matches local priorities, and schedules that allow continuous learning and integration between changes in policy, regulation, and practice.

The review suggests that any attempt to support tenure policies aimed at sustainable drylands development has to focus on reconciling legitimacy, legality and practice of tenure rights. To create legitimacy on the ground, dialogue and negotiation among resource users need to be promoted and supported. This would work best within a legal framework that focuses on process rather than on content, leaving the specifics to

the local people themselves enabling them to adapt their local systems to the specific external and internal threats to tenure security. Law would thus set the principles and procedures of negotiation and dialogue for them to be accountable, transparent and inclusive. Even then, the state would need to function as a capable mediator and enforcer. Of course, the expectation that a state which has created considerable land tenure insecurity would turn around and perform its functions is open to criticism. Yet many strong and capable states have safeguarded, secured and guaranteed property rights in the framework of accountable and transparent governance regimes (Ribot 2004).



## REFERENCES

- Anderson, D.M. and V. Broch-Due, ed. 1999. *The poor are not us: Poverty and pastoralism in Eastern Africa*. Oxford: James Curry, Nairobi: East African Publishing House, Athens, OH: Ohio University Press.
- Anderson, J., Bryceson, D., Campbell, B., Chitundu, D., Clarke, J., Drinkwater, M., Fakir, S., Frost, P.G.H., Gambiza, J., Grundy, I., Hagmann, J., Jones, B., Jones, G. W., Kowero, G., Luckert, M., Mortimore, M., Phiri, Aaron D. K., Potgieter, P., Shackleton, S., Williams, T. 2004. Chance, change and choice in African Drylands: A new perspective on policy priorities. Participants of the Workshop on Development Assistance in the African Drylands, Durban, 2003. CIFOR [http://www.cifor.cgiar.org/publications/pdf\\_files/research/livelihood/Dryland.pdf](http://www.cifor.cgiar.org/publications/pdf_files/research/livelihood/Dryland.pdf)
- Banks T. 2003. Property rights reform in rangeland China: On the road to the household ranch. *World Development* 31 (12): 2129-2142.
- Bassett, T.J. and D.E. Crummey, ed. 1993. *Land in African agrarian systems*. Madison: University of Wisconsin Press.
- Batterbury, S. 1998. Local environmental management, land degradation and the 'gestion des terroirs' approach in West Africa: Policies and pitfalls. *Journal of International Development* 10: 871-898.
- Batterbury, S. and A. Warren 2001. Viewpoint: The African Sahel 25 years after the great drought: Assessing progress and moving towards new agendas and approaches. *Global Environmental Change* 11: 1-8.
- Baxter, P.T.W. and R., Hogg, ed. 1987. *Property, poverty and people: Changing rights in property and problems of pastoral development*. Department of Social Anthropology and International Development. Manchester, England: Manchester University Press.
- Behnke, R.H. and I., Scoones. 1993. Rethinking range ecology: Implications for rangeland management in Africa. In *Range ecology at disequilibrium: New models of natural variability and pastoral adaptation in African savannahs*. R.H. Behnke, I. Scoones and M. Kerven (eds.) Overseas Development Institute. International Institute for Environment and Development.
- Behnke, Roy H., Ian Scoones, and Carol Kerven. 1993. *Range ecology at disequilibrium: New models of natural variability and pastoral adaptation in African Savannahs*. London: Overseas Development Institute.
- Behnke, R. H. and C. Kerven. 1994. Redesigning for risk: Tracking and buffering environmental variability in African rangelands. *ODI Natural Resource Perspectives* No.1, London, U.K.

- Benjaminsen, T. A. and C. Lund, ed. 2001. *Politics, property and production in the West African Sahel: Understanding natural resources management*. Uppsala, Sweden: Nordiska Afrikainstitutet.
- Berry, S. 1989. Access, control and use of resources in African agriculture: An introduction. *Africa: Journal of the International African Institute* 59 (1): 1-5.
- Berry, S. 1989a. Social institutions and access to resources. *Africa: Journal of the International African Institute* 59 (1): 41-45.
- Berry, S. 1992. Hegemony on a shoestring: Indirect rule and access to African agriculture. *Africa: Journal of the International African Institute* 62 (3): 327-355.
- Berry, S. 1993. *No condition is permanent: The social dynamics of agrarian change in Sub-Saharan Africa*. Madison, Wisconsin: University of Wisconsin press.
- Berry, S. 2002. Everyday politics of rent-seeking: Land allocation on the outskirts of Kumase, Ghana. In *Negotiating property in Africa*, eds. Kristine Juul and Christian Lund. Portsmouth, NH: Heinemann.
- Breusers, M. 2001. Searching for livelihood security: Land and mobility in Burkina Faso. *Journal of Development Studies* 37 (4): 49-80.
- Bromley, D.W. 1989. Property relations and economic development: The other land reform. *World Development* 17(6):867-877
- Bruce, J. 2000. African tenure models at the turn of the century: Individual property models and common property models. *Land Reform/ Réforme Agraire/ Reforma Agraria 2000 (1)*. Rome: Food and Agriculture Organization of the United Nations.
- Bruce, J.W. and R. Mearns. 2002. Natural resource management and land policy in developing countries: Lessons learned and new challenges for the World Bank. Issue Paper Number 115. Drylands Program. London: International Institute for Environment and Development.
- Bruns, B., C. Ringler, and R. Meinzen-Dick. 2005. Reforming water rights: Governance, tenure, and transfers. In *Water rights reform: Practical strategies for improving water management*, ed. Bruns, B., C. Ringler, and R. Meinzen-Dick. Washington, DC: International Food Policy Research Institute.
- Cousins, B. 2002. Legislating negotiability: Tenure reform in post-apartheid South Africa. In *Negotiating property in Africa*, eds. Juul, K. and C. Lund. Portsmouth, NH: Heinemann.
- De Bruijn, Miriam, E. and H.J.W. Van Dyke. 1999. Insecurity and pastoral development in the Sahel. *Development and Change* 30: 115-139.

- Downs, R.E. and S.P., Reyna. 1988. Introduction. In *Land and society in contemporary Africa*, ed. Downs, R.E. and S.P. Reyna. University of New Hampshire: University Press of New England.
- Duany, Wal. 1999. Customary law and ways of life in transition among the Nuer of South Sudan. In *Managing mobility in African rangelands: The legitimization of transhumance*, ed. Niamir-Fuller, M. Filey, UK: IT Publications
- Ellis, J.E. and D.M. Swift. 1988. Stability of African pastoral ecosystems: Alternate paradigms and implications for development. *Journal of Range Management* 41:450-459.
- Engberg Pedersen, Lars. 2001. Politics, development and custom: People's struggle for evasion in Yatenga, Burkina Faso. In *Politics, property and production in the West African Sahel: Understanding natural resources management*, eds. Tor A. Benjaminsen and Christian Lund. Uppsala, Sweden: Nordiska Afrikainstitutet.
- FAO. 2005. *Participatory and negotiated territorial development: An approach to rural development*. Rural Development Division. FAO: Rome.  
[http://www.fao.org/sd/dim\\_pe2/docs/pe2\\_050402d1\\_en.pdf](http://www.fao.org/sd/dim_pe2/docs/pe2_050402d1_en.pdf)
- Fernandez-Gimenez, M. E. 2002. Spatial and social boundaries and the paradox of pastoral land tenure: A case study from postsocialist Mongolia. *Human Ecology* 30 (1): 49-78.
- Fratkin, E. and R. Mearns. 2003. Sustainability and pastoral livelihoods: Lessons from East African Maasai and Mongolia. *Human Organization* 62 (2): 112-122.
- Firmin-Sellers, K. and P. Sellers. 1999. Expected failures and unexpected successes of land titling in Africa. *World Development* 27 (7): 1115-1128.
- Goodhue, R. E. and N. McCarthy. 1999. Fuzzy access: Modeling grazing rights in Sub-Saharan Africa. In *Property rights, risk and livestock development in Africa*, ed. McCarthy, N., B. Swallow, M. Kirk, and P. Hazell. Washington DC: IFPRI.
- Goodhue, R., N. McCarthy, and M. Di Gregorio. 2005. Fuzzy access: Modeling grazing rights in sub-Saharan Africa. Brief No. 4. In *Collective action and property rights for sustainable rangeland management*, ed. Esther Mwangi. CAPRI Research Brief. Washington DC: IFPRI.
- GRET/GRAF/IIED. 2002. Making land rights more Secure. *International Workshop for Researchers and Policy Makers*, Ouagadougou, March 19-21, 2002. GRET/GRAF/IIED .
- Hardin, G., 1968. The tragedy of the Commons. *Science* 162:1243-1248.
- Haugerud, A. 1989. Land tenure and agrarian change in Kenya. *Africa: Journal of the International African Institute* 59 (1): 61-90.

- Ho, P. 2000. China's Rangelands under stress: A COMPARATIVE STUDY OF PASTURE Commons in Ningxia Hui autonomous region. *Development and Change* 31: 385-412.
- Hof, A. 2000. Developing a GIS methodology for the analysis of agro-pastoral livelihood and ecosystems in the Zamfara Forest Reserve, NW Nigeria. MSc Thesis, Department of Geography, University of Durham, September 2000.
- Hoffman, I. 2004. Access to land and water in the Zamfara Reserve. A case study for the management of common property resources in pastoral areas of West Africa. *Human Ecology* 32 (1): 77-105.
- Horowitz, M.M. and P.Little. 1987. African pastoralism and poverty: some implications for drought and famine, In *Drought and hunger in Africa: Denying famine a future*, ed. Michael Glantz. Cambridge: Cambridge University Press.
- Hulme, M. 2001. Climatic perspectives on Sahelian desiccation: 1973-1998. *Global Environmental Change* 11: 19-29.
- IFAD. 2000. *Sustainable livelihoods in the Drylands*: Discussion paper for the eighth session of the Commission on Sustainable Development. IFAD: Rome. <http://www.ifad.org/lrkm/theme/range/sustainable.pdf>
- Juul, K. and C. Lund, ed. 2002. *Negotiating property in Africa*. Portsmouth, NH: Heinemann.
- Kamara, Abdul C. 1999. Ethiopian case study. In *Property rights, risk and livestock development in Africa*, ed. McCarthy, N., B. Swallow, M. Kirk, and P. Hazell. Washington DC: IFPRI.
- Kamara, A. C., B. Swallow, M. Kirk. 2004. Policies, interventions and institutional change in pastoral resource management in Borana, Southern Ethiopia. *Development Policy Review* 22 (4): 381-403.
- Lamprey, R.H. and R.S. Reid. 2004. Expansion of human settlement in Kenya's Maasai Mara: What future for pastoralism and wildlife? *Journal of Biogeography* 31: 997-1032.
- Lane, C. Ed. 1997. *Custodians of the Commons: Pastoral land tenure in East and West Africa*. Earthscan Publications.
- Lane, C. R. and R. Moorehead. 1994. *Who should own the range? New thinking on pastoral resource tenure in drylands Africa*. Pastoral Land Tenure Series, paper no. 3. London: International Institute for Environment and Development, Drylands Programme.

- Lavigne-Delville, P., H. Ouedraogo and C. Toulmin. 2002. Land tenure dynamics and government intervention: land tenure policy in West Africa: Current Issues, Debate and Innovation. In *Making land rights more secure: International Workshop for Researchers and Policy Makers*, ed. GRAF/GRET/IIED Ouagadougou, March 19-21, 2002.
- Le Meur, P-Y. 2002. Management of pastoral resources in the West African Sahel: Negotiating water and pastures in eastern Niger and northern Burkina Faso. In *Negotiating property in Africa*, ed. Juul, K. and C. Lund. Portsmouth, NH: Heinemann.
- Leach, M. and Mearns, R. eds. 1996. *The lie of the land; Challenging received wisdom on the African environment*. London: IAI.
- Leach, M., R. Mearns, and I. Scoones. 1999. Environmental entitlements: Dynamics and institutions in community-based natural resource management. *World Development* 27 (2): 225–247.
- Lund, C. 1999. A question of honor: Property disputes and brokerage in Burkina Faso. *Africa: Journal of the International African Institute* 69 (4): 575-594.
- Mackenzie, F. 1989. The interface between two systems of land tenure, Murang'a District, Kenya. *Africa: Journal of the International African Institute* 59 (1): 91-109.
- McAuslan, P. 1998. Making law work: Restructuring land relations in Africa. *Development and Change* 29: 525-552.
- McCabe, J.T. 1990. Turkana pastoralism: A case against the tragedy of the Commons. *Human Ecology* 18 (1): 81-103.
- McCarthy, N., C. Dutilly-Diané, and B. Drabo. 2004. Cooperation, collective action and natural resources management in Burkina Faso. *Agricultural Systems* 82 (3): 233-255.
- Moore, K., ed. 2004. *Conflict, social capital and managing natural resources: A West African case study*. Wallingford, Oxfordshire: CAB International.
- Mortimore, M. 1998. *Roots in the African dust: Sustaining the Drylands*. Cambridge University Press: New York.
- Mortimore, M.J. and W.M. Adams. 2001. Farmer adaptation, Change and crisis in the Sahel. *Global Environmental Change* 11: 49-57.
- Mwangi, Esther. 2005a. *The transformation of property rights in Kenya's Maasailand: Triggers and motivations*. CAPRI Working Paper 35. IFPRI: Washington DC.

- Mwangi, Esther. 2005b. *Subdividing the Commons: The politics of property rights transformation in Kenya's Maasailand*. CAPRI Working Paper 46. IFPRI: Washington, DC.
- Nelen, J., N. Traoré, M. Ouattara, 2004. From colonization to consultation. Regulating use of a pastoral zone in Samorogouan, Burkina Faso. *IIED Issue Paper No. 192*. IIED: London.
- Ngaido, Tidiane. 1999. Can pastoral institutions perform without access options? In *Property rights, risk and livestock development in Africa*, ed. McCarthy, N., B. Swallow, M. Kirk, and P. Hazell. Washington DC: IFPRI.
- Ngaido, Tidiane, 2002. Pastoral Land Rights. Paper presented at the Worldbank Regional Workshop on Land Issues in Africa, Kampala, Uganda, April 29 - May 2. [http://lnweb18.worldbank.org/essd/ardext.nsf/24byDocName/paperspastoral/\\$file/pastoral+land+rights\\_ngaido.pdf](http://lnweb18.worldbank.org/essd/ardext.nsf/24byDocName/paperspastoral/$file/pastoral+land+rights_ngaido.pdf)
- Niamir-Fuller, M. 1990. Community forestry: Herders' decision-making in natural resources management in arid and semi-arid Africa. FAO Community Forestry Note 4. FAO: Rome, Italy. [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=//docrep/t6260e/t6260e00.htm](http://www.fao.org/documents/show_cdr.asp?url_file=//docrep/t6260e/t6260e00.htm)
- Niamir-Fuller, M. 1995. A new paradigm in African range management policy and practice. Invited presentation at the 5<sup>th</sup> International Rangeland Congress, Salt Lake City, Utah, July 23-28.
- Niamir-Fuller, M. 1998. The resilience of pastoral herding in Sahelian Africa. In *Linking social and ecological systems: Management practices and social mechanisms for building resilience*, ed. Berkes, F. and C. Folke. Cambridge, U.K.: Cambridge University Press.
- Niamir-Fuller, M., ed. 1999a. *Managing mobility in African rangelands: The legitimization of transhumance*. Filey, UK: IT Publications.
- Niamir-Fuller, M. and M. Turner. 1999b. A review of recent literature on pastoralism and transhumance in Africa. In *Managing mobility in African rangelands: The legitimization of transhumance*, Niamir-Fuller, M. Filey, UK: IT Publications.
- Niamir-Fuller, M. 1999c. Managing mobility in African rangelands. In *Property rights, risk and livestock development in Africa*, ed. McCarthy, N., B. Swallow, M. Kirk, and P. Hazell. Washington DC: IFPRI.
- Okali, C. 1989. Issues of resource access and control: A Comment. *Africa: Journal of the International African Institute* 59 (1): 56-60.
- Okoth-Ogendo, H.W.O. 1989. Some issues of theory in the study of African land tenure. *Africa: Journal of the International African Institute* 59 (1): 6-17.

- Ostrom, E. 2005. *Understanding institutional diversity*. Princeton: University Press.
- Paniagua-Ruiz, R. 1996. RED-IFO: *Un modèle pour analyser la décentralisation*. Série *Décentralisation et développement rural*, No. 3. Division du Développement Rurale. Rome: FAO.
- Payne, G. ed. 2002. *Land rights and innovation, improving tenure security for the urban poor*. London: ITDG Publishing.
- Payne, G. K. and Fernandes, E. 2001. *Legality and legitimacy in urban tenure issues*. Working paper WP01GP1. Cambridge, MA: Lincoln Institute of Land Policy.
- Peters, Pauline E. 2002. The limits of negotiability: Security, equity and class formation in Africa's land systems. In *Negotiating property in Africa*, ed. Juul, K. and C. Lund. Portsmouth, NH: Heinemann.
- Raynaut, C. 2001. Societies and nature in the Sahel: Ecological diversity and social dynamics. *Global Environmental Change* 11: 9-18.
- Ribot, Jesse C. 2004. *Waiting for democracy: The politics of choice in natural resource decentralization*. Washington, DC: World Resources Institute.
- Salih, M.A.M., T. Dietz, and A.G.M. Ahmed. 2001. *African pastoralism: Conflict, institutions and government*. London: Pluto Press and OSSREA.
- Sandford, S. 1983. *Management of pastoral development in the Third World*. Overseas Development Institute. Bath: Pitman Press.
- Scoones, I. ed. 1994. *Living with uncertainty: New directions in pastoral development in Africa*. Intermediate technology publications. London: IIED.
- Schmid, A. Allan. 2004. *Conflict and cooperation: Institutional and behavioral economics*. Blackwell Publishing: Malden, MA.
- Shipton, P. and M. Goheen. 1992. Introduction: Understanding African land-holding: power, wealth and meaning. *Africa: Journal of the International African Institute* 62 (3): 307-325.
- Sneath, D. 1993. Social relations, networks, and social organization in post-socialist rural Mongolia. *Nomadic Peoples* 33: 193-207.
- Sneath, D. 1998. State policy and pasture degradation in inner Asia. *Science* 281: 1147-1148.
- Steenbergen, F. van, and T. Shah. 2003. Rules rather than rights: Self-regulation in intensively used groundwater systems. In *Intensive use of groundwater. Challenges and opportunities*, ed. Llamas, M. and E. Custodio. Lisse. The Netherlands: Balkema.

- Thebaud, B. 2002. The Management of pastoral resources in the West African Sahel: Negotiating water and pastures in Eastern Niger and Northern Burkina Faso. In *Negotiating property in Africa*, eds. Juul, K. and C. Lund. Portsmouth, NH: Heinemann.
- Thebaud, B., H. Grell, and S. Mieke. 1995. *Recognizing the effectiveness of traditional pastoral practices: Lessons from a controlled grazing experiment in Northern Senegal*. International Institute for Environment and Development. Issue Paper Number 55. Drylands Program.
- Thebaud, B. and S. Batterbury. 2001. Sahel pastoralists: Opportunism, struggle, conflict and negotiation: A case study from Eastern Niger. *Global Environmental Change* 11: 69-78.
- Thomas, D., C. Twyman, and F. Harris. 2002. Sustainable development in drylands: geographical contributions to a better understanding of people-environment relationships. *The Geographical Journal* 168 (3): 193-194.
- Toulmin, C. 1995. *Combatting desertification: Setting the agenda for a global convention*. Drylands Issues Paper. London: IIED.
- Toulmin, C. and J. Quan, ed. 2000. *Evolving land rights, policy and tenure in Africa*. IIED Drylands series. London: Department for International Development (DFID).
- Tyler, Stephen R. 1999. Policy implication\*ns of natural resource conflict management. In *Cultivating peace: Conflict and collaboration in natural resource management*, ed. Buckles, D. Ottawa, Canada: IDRC.
- Vedeld, Trond. 1996. Enabling local institution building: Reinventing or enclosing the commons of the Sahel. In *Improved natural resource management: The role of formal organizations and informal network and institution*, ed. Secher Marcussen, H. Occasional Paper no. 17. Roskilde, Denmark: IDS, Roskilde University.
- Westoby, M., Walker, B., and Noy-Meir, I. 1989. Oppurtunistic management of rangelands not at equilibrium. *Journal of Range Management* 42(4): 266-274.
- Yahya, S.S. 2002. Community LAND TRUSTS and other tenure innovations in Kenya. In *Land rights and innovation, improving tenure security for the urban poor*, ed. Payne, G. London: ITDG Publishing.



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