Can pastoral institutions perform without access options?

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ICARDA Social Science Papers

This is the ninth of the *ICARDA* Social Science Papers, in a series which is intended to contribute to sustainable agriculture in the West Asia and North Africa (WANA) region.

ICARDA Social Science Papers present the results of on-going research both within the Center and in collaboration with national program partners in the region. The series is designed to disseminate findings widely to encourage discussion and comment on improved agricultural technologies, their use and benefits—including the sustainability of small-scale food-production systems. To disseminate the information quickly, the papers are not subjected to the rigorous approval procedures of more formal publications. But each paper is peer reviewed by a panel of ICARDA senior social scientists before publication.

The papers are particularly aimed at scientists and researchers within the national agricultural research systems of WANA, the international research community, policy-makers, donors, and international development agencies.

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1. Introduction

The failure of state ownership and statutory legislation to achieve better resource management has fostered new interests favoring community control and management, and customary tenure systems (Blaikie 1985; Jodha 1985; Bromley 1984; Bruce 1986; Blaikie and Brookfield 1987; Lawry 1990; Rose 1992; Vedeld 1992; Wachter 1992; Knox McCulloch and Hazell 1998). The main argument is that most of the externalities associated with resource management result from the failure to protect and guarantee individual and community property rights (Lawry 1990; Ngaido et al. 1997). Initiatives to recognize communities' rights have been going on since the early 1910s in Morocco and the 1990s in Niger. In Morocco, tribes' rights over their territories have been recognized since 1912 and provisions were made to delimit and title these lands in the name of the tribe (Nassif et al. 1997), and in Niger, the new rural code grants priority use-rights to pastoral communities. These different approaches to common grazing resources highly imply the capacity and strength of local communities and resource users to manage adequately their resources.

However, these legal approaches merged all resources used by pastoralists into a "single resource" defined as "common-property resources." Though conceptually this may be adequate for targeting policy interventions, it is nevertheless misleading. These approaches, like most common-property studies, neglect the importance of production strategies and resource-access options used by pastoral communities to hedge against risks associated with environmental variability and other external pressures and thus maintain their pastoral systems. Production strategies are the set of individual and community responses to demographic, environmental, economical, and political pressures affecting their production system and their livelihoods (Ngaido 1996). Access options are bundles of options available to individuals and communities for securing their livelihoods and production in response to the constraints they face. These access options include owned pastures, crop residues, institutional arrangements made with other communities to have access to their pastures, and purchased feeds.

Moreover, the proponents of this "single" resource-competition model use the framework of internal and external pressures to explain that space is limited and that internal pressures (population growth, herd size growth, and change of activity) and external pressures (climatic changes and environmental degradation) create scarci-

ty and conflicts (Peperkamp 1986; Bos and Peperkamp 1989; Staar 1986; Evangelou 1984). Strategies adopted by a group of resource users in response to these pressures restrict the competing users' abilities to respond to their own constraints. As a result, competing users are faced with a situation of scarcity. In the Sahel, farmers' encroachments on grazing areas and corridors are good examples that show that pastoralists are limited in their ability to conduct their pastoral activities. Reduction and degradation of common pastures have led livestock owners to increasingly rely on crop residues and purchased feeds (World Bank 1995; Anoun et al. 1996; Ngaido et al. 1997).

Local-resource scarcity has always been a major constraint to pastoral production in dryland areas and has been the major driving force for development of access options based on institutional and market relations. Pastoral communities have always been aware that their local grazing resources will not suffice for more than three or four months and that they need to secure feed for their herds for the remaining eight to nine months. As such, pastoral communities have developed production strategies based on "free grazing" obtained mainly through reciprocal grazing arrangements, which act as risk-coping strategies. In his study of the Beni Meskine in Morocco, Berque (1934) describes the transhumance of 58% of Oulad Ali's livestock (estimated at 14,668 sheep in 1934) from El Brouj to Mdakraj. In addition, the Beni-Guil tribe, located in the eastern regions of Morocco, has a territory that is divided into two parts. During winters, the northern section of the tribe goes to the south to escape the cold weather; and during summers, the southern section moves to the north to avoid the heat (IAVHII and USU 1993; MAMVA 1994a). Other examples are found in the Mashreq and Maghreb (North Africa) regions. In Niger, the south-north-south transhumance routes also depend on rainfall. Herders from Nigeria come to graze in the pastoral zones of Niger and the same reciprocity takes place during the dry season.

In recent years, however, socioeconomic and environmental changes and increasing demands over pastoral land resources have affected the possibility of pastoral institutions' solely relying on such arrangements and ensuring the livelihood of their members. For instance, pastures and pastoral resources are increasingly being appropriated by individual members or encroached upon by herders and farming communities. These changes induce the loss of local institutions' capacity to provide secure production strategies for their members and weaken the capacity of communities to enforce resource-management rules and win the support of its members. This loss of institutional capacity and strength is translated in the rural areas ***into increasing disputes over common-property resources, increasing envi-***

ronmental degradation, and increasing reliance of pastoralists on the market for the upkeep of their animals.

This study is intended to contribute to the common-property debate by strengthening the link between property rights and production strategies, and to show how institutional inefficiencies may occur in any system of common-property rights regardless of the degree of control that communities have over their resources. Land disputes over common-property resources are considered as indicators of institutional inefficiencies because it is assumed that, if local institutions were efficient in defining and implementing rules, community members would respect them and would be unlikely to seek support from government institutions. What really matters here is the capacity of local institutions to meet community demands and adjust to production risks associated with environmental, economic, and political pressures while maintaining the welfare of the community as a whole. This study draws comparisons between the Moroccan and Nigerian experiences to evaluate the factors that have led to institutional inefficiencies.

This chapter is divided into six sections. After this introduction, the institutional framework is discussed in the second section on the basis of two important concepts: capacity and strength of local institutions. The capacity of pastoral institutions is based on the availability of resources both at the local level as well as in the broader vicinity, where they serve as access options. Capacity is also linked to effective resource-management institutions, which embody decision-making power and control, and enforcement mechanisms, for resource management. The strength of these institutions depends on the degree to which there are effective and exclusive customary rights over community resources, the existence and relevance of existing rules and regulations, members' adherence to these rules, and the recognition and guarantee of local institutions by the state.

How land policies affected the capacity and strength of present pastoral systems to manage their resources and the performance of local institutions by drawing lessons from land disputes from Morocco and Niger are analyzed and evaluated in the third and fourth sections, respectively. New trends and the emergence of new access options are assessed in the section after and conclusions, reached from the results of the study, are finally described.

2. Institutional framework

In the dryland areas of Morocco and Niger, integrated crop-livestock production is presently the prevailing system. The dominant land-tenure system in dryland areas of Morocco and Niger is common property. Blaikie and Brookfield (1987) define common property resources as resources that are "subject to individual use but not to individual possession," have a limited number of users with independent use rights, and have users organized as a "collectivity and together have the right to exclude others who are not members of that collectivity." Bromley (1991) defines common property as the "private property of a group of co-owners." These definitions suggest that users have equal property rights over resources and that they have the capacity to fix the rules of access and the norms of use of these resources, but typically not every user has the right to define the rules of access and use. The right to make the rules is often confined to a few (Ciriacy-Wantrup and Bishop 1975; Jodha 1985; Bruce 1989).

The thrust of common-property studies is to investigate the opportunities and constraints that property rights provide to rural communities and individuals regarding their production decision-making. In that respect, property-right institutions define the possibilities available to individuals and communities regarding their access and use of a given resource (land, water, pastures, and trees) and guarantee that these possibilities are granted to individuals and communities for carrying out and maintaining their production strategies. Property rights define to communities and individuals what they can and cannot do, to what extent and for how long, with a given resource (Place et al. 1994; Ngaido 1996). In dryland areas with less than 350 mm of rainfall per year, three types of land rights exist: private property, secured access, and access options (Table 1). These broad categories are not static, because there is a range of combinations between categories and large variations within and between communities for the same production system.

Table 1. Land rights in dryland areas.

Level	Local or tribal level		Access options	
Access types	Private property	Secured-access rights	Institutional (neighboring tribes)	Market
Nature	Tribal and individual ownership	Use rights on tribal cropping and grazing lands	Access rights to pastoral resources of other tribes through reciprocal arrangement	Rental of cropresidues and purchase of feeds

2.1 Private property

Private property relates to freehold property rights that are enjoyed by individuals and families over land, water, and animal resources. They have full control over these resources and can bequeath, sell, or lend them. This is the case of melk or mulk lands in the West Asia and North African region, where holders are certain to reap the full benefits of any investment they make on their lands. In Morocco, tribes have private property over their common resources. These rights are recognized by the Moroccan government and sometimes titled in the name of the tribe (Pascon 1980; Mahdi 1997a, 1997b; Nassif et al. 1997). This situation enables the tribes to decide on how to use their resources. However, tribes are required to seek the approval of the Ministry of Interior, which has the trusteeship of collective tribal lands. In addition, individual tribal members can hold private property on their lands. In Niger, however, the situation is quite different. Pastoral communities do not have private claims either at the individual or at the tribal level on their pastoral resources or on the lands that they cultivate during the rainy season.

2.2 Secured-access or use rights to common pastoral resources

Secured-access rights, which are the dominant rights over pastoral resources, are use rights granted to community members by traditional leaders on their common lands and water resources for production activities. Under such tenure regimes, individuals have only priority use-rights that can be maintained for a long periods but do not entitle individuals to private property. Community members may also request additional or new lands to avoid depleting them. The role of traditional authorities in these systems, therefore, has been crucial for regulating access and use over these resources. The flexibility of this tenure system, which gives tribal leaders the potential to recapture excess lands and redistribute them to needy members, is the basis of the strength of traditional institutions. Furthermore, this system has sustained the capacity of tribal institutions to secure the productive strategies of their members.

2.3 Access options

Access options are bundles of options available to individuals and communities for securing their livelihood and production systems in response to the constraints they face. Access options to land, animal, and water resources affect individual and community decision-making, involving different institutions, transaction mechanisms, and costs. Individuals and communities in the dryland areas have developed a large array of tenure arrangements for access and use of resources, which are risk sharing devices, to buffer against socioeconomic, demographic, environmental, and political pressures.

2.3.1 Ensuring the welfare of resource-poor community members

Given that productive resources (labor, land, or animals) are unequally distributed, land redistribution allows granting land resources according to the size of the family. In many cases, large families were allocated access to more lands, but had also more people to feed. As long as the system preserved equitable resource access, members were satisfied and abided by the rules. This inequality in land holding becomes dangerous, as discussed in later sections, only if the system of redistribution becomes nonfunctional. Animal- and grazing-right issues are more complex because traditional authorities typically have not had animals to distribute to their members, although they may have fostered opportunities for poor members to make grazing contracts with rich community members or outsiders (Berque 1934; El Youssoufi 1976; Anoun et al. 1996). These grazing contracts, which give herding partners half of the production, permit poor community members to build their herds and exercise their access rights on common grazing pastures. Swallow (1994) argues that

> "the circulation of group property from richer to poorer households and from one generation to the other has been crucial to the recuperative power of WoDaaBe households in Central Niger."

The possibility of poor herders contracting with outsiders has served as an incentive for rich community members to secure contracts with poor herders to exclude potential external contracts, and therefore access to their growing resources by outsiders' herds. The cost of excluding outsiders is reflected in arrangements made between rich and poor community members. Benefits are that owners of large herds can prevent or reduce overstocking on common pastures, and that dividing large herds into smaller ones enables large-herd owners to better use common pastures. However, if poor herders decide to contract with outsiders anyway, this may result in disputes. El Youssoufi (1976) describes the conflict between large- and small-herd owners in the pastoral perimeter of El Brouj because small-herd owners made grazing contracts with outside herds. In Niger as well as in Morocco, contract herding has been a mechanism for asset building for many poor community members. This case is illustrated in Example 1, where Oumarou, a *Fulani* herder, moved from herding village animals to being a livestock owner himself.

Example 1: Appropriation of the Mozague grazing area by farmers in the Arrondissement of Birni N'konni.

The dispute over a grazing area, between Oumarou, a herder, and the Mozague villagers, started in June 1990. The dispute created such hostilities that in July 1990, Oumarou mortally wounded the Mozague village chief.

The traditional grazing area of the Mozague village is located in the western bank of the dam and 1 km southwest of the Rouga-Mozague village. The disputed site is a plateau with rocky soils. It is 1.5 km long (east to west) and 1 km wide (north to south). It is surrounded in the south by Nigeria, in the east and the north by basins, and in the west by sorghum fields cultivated by the villagers of Rouga Mozague. The distance to the frontier with Nigeria is approximately 200 meters. The vegetation is composed mostly of brush and some grass. This site of approximately 150 hectares has been reserved for livestock production for more than 70 years.

In the middle of the site are mud houses separated into two compounds. One is composed of six houses inhabited by six heads of households that are members of the same family. Oumarou inhabits the other. The six heads of households settled in this area in 1954. At that time, Oumarou and his father, who were living in Mozague as village herders, acquired the trust of the villagers as well as of local authorities and were able to settle in the actual site in 1966, where they cultivated their own fields.

In 1983, a dispute broke out between the *Fulani* and the local fanners. After the mediation of administrative and customary authorities, the area was classified as grazing area and Oumarou became the sole authority responsible for the area. Moreover, Oumarou, whose family originated in Nigeria, continues to maintain close relations with Nigerian herders who negotiate the use of his pastures.The building of the Mozague Dam has led to soil erosion and has considerably reduced the size of the fields cultivated by the local population. This situation, which started in 1988, prompted farmers to claim ownership over Oumarou's grazing area in 1990 on the grounds that they cultivated these lands before 1954.

The mediation of the conflict by local administrative and customary authorities (canton chief and chief of the *Fulani* group) have resulted in the following changes:

- The areas of the *Fulani* compounds and the fields cultivated by Oumarou and his son were demarcated.
- **A** small grazing area for Oumarou's livestock was also demarcated.
- The remaining area was divided into 70 fields and redistributed to farmers of the Mozague village.
- A corridor 15 meters wide links the *Fulani* camp to the watering point and the traditional graz ing area

Source: Report of Mission by Moharnadou Athoumane, chief of the Service of Animal Resources, 25 July 1990.

2.3.2 Ensuring the welfare of community members: Mobility and reciprocity

Two of the traditional risk-management strategies that are the most well developed are the mobility of pastoral people and reciprocity arrangements for the use of their

tribal pastures (Lewis 1981; Neisheiwat, 1991, 1992; Masri 1991; Behnke et al. 1993; Swallow 1994). These strategies are mechanisms used by pastoral communities to extend their resource availability and ensure their production strategies. These risk-management strategies put pastoral communities under different property-right systems and decision-making spheres. For instance, when herders in Niger stay in the pastoral zone, Fulani or *Tuareg,* tribal leaders facilitate their access to pastoral resources, whereas when they are using grazing corridors and areas in the cropping areas, they rely on village and canton chiefs to give them access. In Morocco, Oulad Fenane have grazing lands and a forest held in common (Anoun et al. 1996). The common grazing areas are under control of local institutions, while the forest is managed by local collectivities. Cousins (1995) uses the concept of resource "patchiness" to argue that

> "...recognizing spatial heterogeneity of rangeland resources implies that herd movement as a management strategy should be accepted and facilitated."

However, this resource patchiness is not only environmentally but also institutionally based because each "patch" is under different jurisdiction and governed by a different set of institutional arrangements to access and use these resources.

As discussed previously, the inherent resource scarcity of local resources makes such access options critical for maintaining pastoral systems (Figure 1). The capacity of tribal institutions to arrange access to extra resources during seven to eight months a year using different networks and routes depending on rainfall and pasture conditions strengthened local institutions. Ngaido (1994b) found that canton chiefs in Niger who had land to distribute had more authority over their community members. The existence of these access options has been crucial for sustaining individuals in their production systems. Access options, which play an important role by extending resource availability to community members through institutional arrangements between community members and with other tribes, strengthen the position of tribal leaders. Parts of the capacity and strength of local institutions have been based on these access options because it creates greater security to members (Figure 1). Alternatively, changes in these access options hinder institutional performance. In the following section, land policies and their effects on the capacity and strength of local institutions in Morocco and Niger are discussed.

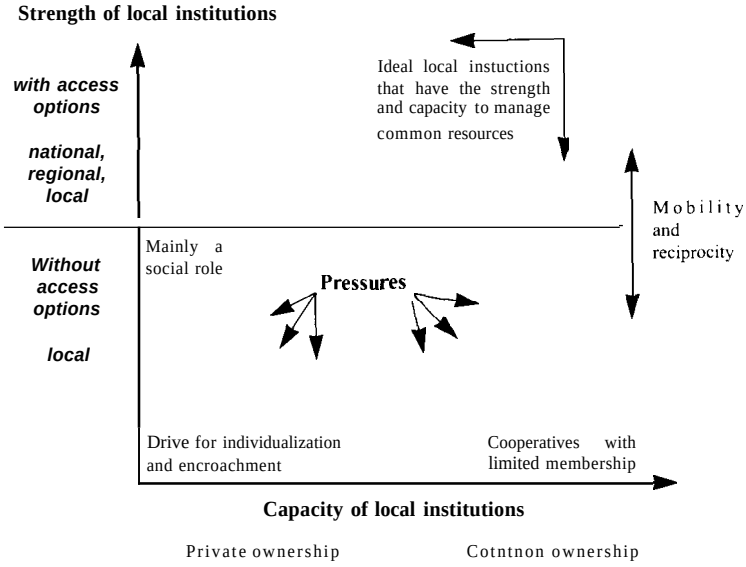

Figure 1. Framework for institutional capacity and strength.

3. Land policies: Capacity and strength of local pastoral institutions

Land policies of Morocco and Niger constituted different approaches, but their impacts on pastoral communities are similar.

3.1 Morocco

In Morocco, tribal rights have been recognized since 1912 and subsequently many legal texts were enacted to strengthen tribal and member rights (Nassif et al. 1997; Chiche 1997; Mahdi 1997a; Qarro 1997). Moreover, the 1916 Decree was the first measure recognizing traditional institutions and providing them with a resource management role (Bouderballa et al. 1977). This role was confirmed by the 27 April 1919 Decree, which required communities to choose their land management representatives according to customary rules. Under the trusteeship of the Ministry of Interior, these land managers were organized into an assembly *(jemaat* nouab) to carry out land distribution, conciliate land disputes, safeguard the interests of their communities, and represent communities for any legal matter related to their col-

lective lands (Nassif et al. 1997). Furthermore, the provision, which stated that any opposition against implementing decisions of local authorities is punishable by one to three months in jail and a fee ranging from 120 to 500 dirhams' (Article 4), reinforced the position of tribal leaders.

The focus on tribal resources and the granting of common property rights gave tribal institutions more control over their resources and prevented the loss of their lands to colonization (Nassif et al. 1997). The recognition of tribal ownership also provided tribal institutions the strength to manage tribal resources and safeguard the livelihood strategies of community members. However, two major shortcomings of the law, which affected the pastoral system as whole, were the granting of perpetual rights to tribal members and neglecting institutional access options between tribes. In their 1995 study, the International Institute of Agronomic Research (INRA) at Settat found that the rural commune of Oulad Bouali had totally distributed its pastures into cropped fields and that, in the forest areas, Oulad Fenane, communal lands were subdivided between tribes into plots called tmoutira. These plots, which were given to individual members, were governed by a special contract established by the district head. The growing individualization of common tribal resources indicates that without the provision made in the 1919 Law, which requires approval of any land use change by the Ministry of Interior, many of the common pasture would have disappeared.

Moreover, as argued before, redistributing land among community members had been a process that ensure the welfare of all community members. Once this system breaks down because individual ownership claims are being asserted on common resources, the only alternative response to land demands because of population pressures is encroachment or distribution of marginal areas. Consequently, the loss of common lands leads also to the loss of institutional access options based on reciprocity, weakens traditional resource management systems, and fosters increased disputes. New forms of access options, generally based on market relations, are continuously replacing institutional arrangements. El Youssoufi (1976) argues that grazing contracts on cropped fields are based on market price evaluated by unit of forage.

3.2 Niger

In Niger, however, the land tenure situation has been quite different. Since the 1960s, the government of Niger undertook a series of measures to regulate access and use of pastoral resources and relations between herders and farmers[2]. However, these different measures, aimed at securing livestock production, granted only a limited role to pastoral institutions, which did not have a managerial role over graz-

[1] US$ 1 = 9.45 dirhams; 1998 official rate.

[2] The 26 and 27 May 1961 Law (Nos. 61-5 and 61-6) fixes the (200 mm rainfall) northern limit of cultivation and the 18 June 1987 Decree (No. 87-077) regulates the circulation and grazing rights to livestock in agricultural zones.

ing areas and corridors in cropping areas. Pastoral resources remained under control of traditional chiefs. However, even in the pastoral zones, where resources are supposedly to be under control of pastoral communities, traditional canton chiefs for agricultural communities were able to override the 61-5 and 61-6 laws by allocating agricultural fields (Delehanty 1988; Ngaido 1993a, 1993b). A dispute case between Fulani and Haussa farmers, who were permitted by the canton chief to cultivate lands that were located in the pastoral zone, is described in Example 2. Furthermore, the management of these lands was complex because pastoral groups (Fulani or Tuareg) and farming groups (Haussa or Zarma) were from different ethnic groups.

Example 2: Appropriation by farmers of a basin located in the pastoral zone (Cuvette de Tam), District of Maine Soroa.

This conflict is between farmers from the Nzoulou village (canton of Chetimari) and 14 Fulani settlement camps, of which four are located permanently in the Tam basin and 10 are spread around the basin.

In recent years the lands of the Nzoulou farmers, who also own small ruminants (sheep and goat), have been threatened by sand dunes. Soil degradation, population pressure, loss of soil fertility, and rainfall shortages have pushed the villagers to search for new lands. In 1990, with the authorization of the canton chief, 18 farmers from the village developed new lands regardless of the 1969 decision. This decision, which was taken jointly by the Subprefect, the Deputy, the Gendarmerie of Maine, the canton chief of Maine Soroa, the canton chief of Chetimari, and the chief of the Foulatari group, forbade agricultural production in this basin and reserved it for livestock production.

Farmers argued that the reduction of herds and the lack of herds moving in the area motivated them to occupy the Wargaza basin and that livestock production and agriculture could be carried out simultaneously in the basin. They recognized their good relationship with the ***Fulani*** herders. Nonetheless, they affinned that the final decision regarding the use of this basin was in the hands of traditional leaders.

Herders also stressed their good relations with the farmers despite the abundance of herds (both local and foreign) during the rainy season. They wanted to confirm the 1969 decision, which allocated the basin for livestock production. They affirmed that the final decision was in the hands of traditional leaders. Finally, in June 1992, an agreement was reached and the basin was divided into two parts: one for agriculture and the other for livestock production. Herders from the *Fulani* camps were also granted fields to cultivate.

Consequently, questions of who controls, who has rights to, and who determines the proper use of grazing lands are critical in Niger. The major feature of managing pastures is the confusion between leaders of farming communities, who consider that grazing areas and corridors fall under their jurisdiction, and pastoral community leaders. The former assert quasi-ownership rights over pastures and take the liberty of allocating land rights to farmers. For leaders of pastoral communities, the lack of control over pastures reduces them to the status of a use-right holder over graz-

ing lands. Even though *Tuareg* and *Fulani* pastoral authorities have officially the same rank as canton chiefs, their major role in the control of grazing areas and corridors is to police the use of these resources. They may facilitate access of these resources to seasonally migrant pastoral communities in the pastoral zone, but they cannot change the actual usage of the land. Furthermore, as allocated lands for cultivation are sources of revenues that permit chiefs to respond to the needs of their members, controlling these lands were important.

As a result, local agricultural authorities hold the bundles of rights over pastures while pastoral authorities are beset with the bundles of obligations to be enforced in their communities. In other words, canton and village chiefs are the authorities capable of changing the usage of the land. This duality creates problems because the former can allocate these lands without consulting the latter. This is also true in the margins of the pastoral zone, where canton and village chiefs allocate lands for cropping in areas previously allotted for grazing (Ngaido 1994b).

The lack of capacity of local pastoral institutions to ensure the livelihood strategies of their tribal members pushed many cattle owners to develop their own networks for accessing grazing areas or cultivable lands. For example, the "land to the tiller" policy (18 December 1974) extended cropping into grazing areas and corridors and encouraged many herders to settle and appropriate land to cultivate. Furthermore, land appropriation, which was favored by the 1970s drought that decimated most of the herds, was an opportunity for many pastoralists to secure the welfare of their families. Furthermore, many herders received fields to cultivate from canton and village chiefs. As such, pastoral authorities are increasingly losing control over their people. However, the ethnic dimension continues to be very strong and still acts as cement between pastoralists.

These land policies have had different impacts on the capacity of local institutions to secure the livelihood strategies of their members. In the case of Morocco, it is clear that the main objective was to strengthen and sustain tribal institutions and production systems, whereas in Niger, land policies induced "open access" and land encroachment. In addition, policy measures in both countries were based on the expectation that communities would use their customary institutional arrangements to manage access and use of their respective resources. These expectations were often deluded, because individual members tended to favor their individual welfare at the expense of collective welfare. This is exemplified by growing disputes over common resources.

4. Performance of pastoral institutions: Disputes over common lands

Quantifying the performance of local institutions is not an easy task because of the complexity of their functions. However, two areas of performance could be quantified. The first type relates to the capacity of local institutions to manage their common pastoral resources. The quality of the resource base could be used as an indicator of that performance. If these resources are well managed, it increases the welfare of the community as a whole and reduces its dependency on access options. The performance can be seen as the marginal effects of setting and enforcing the rules over resource use. The second type of performance indicator is the behavior of community members. Are community members abiding by the rules that govern access and use of these common resources? What are the strategies for using common pastoral resources? In this chapter, the second type of indicator, which is assumed to reflect constraints faced by community members and the incapacity of local institutions to ensure their livelihoods, is used to evaluate the performance of local institutions.

4.1 The loss of capacity and strength

Increasing demand over land, the incapacity of local institutions to grant land, and inadequate land policies have increasingly led to the hardening of the boundaries between pasture and cultivated lands. The fluidity of the boundaries between grazing and cultivated lands always required the mediation of traditional institutions in granting access and use to different users. Today, the boundaries of these lands are fixed and the rules, which controlled access and use to these resources, lost their effectiveness and are no longer respected. Moreover, pastoralists are settling and appropriating land for cropping (Kirk 1995). Use and access rights are increasingly being transformed into more secured tenure and grazing rights are also being transformed into cropping rights.

Consequently, weaker community members, who depended on institutional capacity for their livelihood, will be negatively affected because land encroachment prevents them from direct access to common resources and precludes them from making grazing contracts, which were important for asset building. These community members are increasingly relying on migration to generate income and support their families. Ngaido et al. (1998) conducted a survey in the El Brouj District (Morocco) where they found that 33% of household revenues came from off-farm activities.

Moreover, many herders in Niger as well as in Morocco are increasingly settling in pastoral lands and reverting to agricultural production as their main source of income.

Changes in customary welfare systems, breakdown of resource-allocation mechanisms, and government land policies negatively affect usufruct rights that had been enjoyed in the past by community members in Morocco and Niger. Moreover, the breakdown of the fallow system, the reduction of virgin lands, and the increasing demand for cultivable lands that has resulted from changes in government policies have unveiled the contradictions between livestock production and agriculture.

As such, changes in property rights not only affect the rights of community members of their tribal resources, but also disrupt risk-management systems based on tribal reciprocity and reduce efficiency in the traditional network of resource users. This loss of reciprocity could be considered as a loss of tribal efficiency in securing the livelihood strategies of their members. This loss of capacity, which generally occurs when tribal common resources are appropriated by the state or transferred to individuals, encourages local users to encroach upon and transform the resource base without regard for other community members. Furthermore, this loss can happen when tribal groups are no longer capable of ensuring the livelihood of different community members because of demographic, economic, or environmental pressures. Besley (1995) argues that loss of efficiency arises when there is "a disjunction between communal rights and individualized decisions." Consequently, land policies of Mashreq, Maghreb, and Sahelian regions affect the traditional property rights environment.

Under such situations, the main strategies of members are to encroach into the common resource to guarantee their own production system at the expense of other community members or rely on the market to feed their animals. Anoun et al. (1996) found examples of livestock owners who enclosed their plots with cereal fields, thereby excluding other tribal members from tribal pastures of Oulad Chouaoua, Morocco. This example illustrates how individual members respond to secure their own welfare at the expense of weakening local institutions that are incapable of enforcing equitable access rules. Such opportunistic approaches foster disputes between tribal members.

4.2 Land disputes over common pastoral resources

Most of the literature on land conflicts in Africa deals with farmers' encroachment on pastoral lands (Bos and Peperkamp 1989; Staar 1986; Evangelou 1984). Peperkamp (1986) defines land-use conflicts as situations where "actors are hindered in the conversion of their needs in spatial terms, but in such a way that they wish to take action at the expense of the other party or parties." Wade (1987) and Staar (1986) support that farmer and herder disputes result from population pressures and reduced soil fertility. Homer-Dixon et al. (1993) support the idea that scarcity of natural resources contributes to violent conflicts. Moreover, these conflicts over common property resources are often drawn along ethnic lines, for example Fulani herders against local non-Fulani farmers (Horowitz 1989; Basset 1988).

However, these conflicts are only part of the spectrum of tensions over resources. Conflicts are heightened manifestations of the "erosion" of the social status quo, which was based on the capacity of local leaders to ensure the existence of access options. Decision-making responsibilities were embedded in the status quo, governing choices over resource management. Land disputes illustrate the breakdown of the interaction between physical and human processes, which formerly provided stable and sustainable reproduction of natural and social processes. In addition, this chapter supports the idea that internal dynamics that lead to resource scarcity are long-term processes and that actual inefficiencies, environmental degradation, and land disputes over common pastoral resources are worsened by inappropriate land policies based on a single-resource framework.

Disputes between tribal members and between farmers and herders arise not only from competition over land but also from a drive to secure livelihood strategies. Indeed, once common pastoral lands are appropriated for agricultural purposes, the tendency is to consolidate the control over the field and assert ownership rights. In so doing, farmers increase the costs of livestock production because herders are required to spend more time tending their herds and seeking other feeding alternatives. Herders also appropriate land to reduce transaction costs associated with feeding their herds and to avoid completely losing their traditional use-rights. The distribution of land disputes officially reported on common lands for Morocco in the El Brouj District (1986-1996) and for Niger in the Districts of Maine Soroa, Mirriah, Guidan Roumgi, Birni Nkonni, and Boboye (1989-1993) are shown in Table 2. Disputes resolved directly by family or tribal institutions are not reported here.

Table 2. Distribution of disputes on common pastoral lands in Morocco (1986-1996) **and Niger** (1989-1993).

Type of dispute	Morocco (%)		Niger (%)	
	Collective arable lands	Collective pastures	Grazing areas	Grazing corridors
Cropping	15	62	61	19
Crop damage			11	9
Fencing	4	16		
Threshing area		8		
Harvesting	3			
Building a house	1			
Others	1	5		
Total	24	76	72	28
Number of cases	77	245	83	32

Source: Data from Morocco came from Nassif et al. 1997; Data from Niger was collected by the author under the cooperative agreement between the Land Tenure Center, University of Wisconsin, Madison and the U.S. Agency for International Development (USAID), from 1992-1994.

†Fencing, which is a strategy used by livestock owners to exclude other community members, consists of growing two to three rows of barley around a given area. Growing these rows of barley effectively prevents others from coming in.

In Morocco, 76% of the recorded 322 dispute cases were on common pasture, among which 47% were cropping encroachments and 16% involved fencing using barley rows. In Niger, all the 115 disputes concerned essentially pastoral resources, among which 80% were encroachments. These data are just indicators of the difficulties facing local pastoral institutions in managing common resources.

In both countries, the drive for individual appropriation of common resources highlights the loss of capacity and strength of local institutions to govern resource use. Increasingly, pastoralists are relying on themselves to ensure their production strategies. This trend is found all over the Mashreq, Maghreb, and Sahelian regions. Pastoral societies, which face resource scarcity, are developing new socioeconomic relations related to production where markets and new structures are increasingly taking over.

5. Searching for new alternatives for pastoral resources management

Presently, the question of how to stimulate collective action for better resource management is one of the major concerns of policy-makers and researchers. Collective action is how individuals and communities jointly translate the opportunities and constraints into concerted resource-use behaviors and practices and property-right institutions. However, resulting behaviors and practices may not always be beneficial and may lead to resource misuse and mismanagement. For instance, in the previous section, it was noted that encroachment on common pastures is also inducing conflicts and environmental degradation. The concern here is how to transform these manifestations into positive actions that win the support of all community members and at the same time foster efficient, equitable, and sustainable resource use. To address this issue, many options have been identified and are being implemented in many countries, but discussion in this chapter focuses on three of these options: development of pastoral cooperatives. redefinition of pastoral rights, and development of market-based options.

5.1 Development of pastoral cooperatives: Sustaining tribal systems in Morocco

New pasture- and livestock-improvement projects (Projet de Developpement Pastoral et d'Elevage de l'Oriental) are being implemented in the eastern regions of Morocco with the support of the International Fund for Agricultural Development (IFAD). This is an eight-year project. The originality of the new approach consists of granting greater responsibility to local users by using tribal affiliations as the base of cooperative membership and by involving communities in the decision-making process (El Alaoui 1997). The major assumption is that building on existing tribal structures provides a stronger base for the project, reduces potential disputes between cooperative institutions and tribal institutions, and reinforces collective action and solidarity among tribal members. Overall, this approach is likely to win the support of tribal members and have higher chances for success. However, a few constraints such as the heterogeneity of local institutions and the neglect of traditional access options have been identified.

5.1.1 Heterogeneity of local institutions

Many types of cooperatives were formed using different levels of social organizations, from the tribe to settlement camps. The difference in membership and degree of organization play an important role in the effectiveness of cooperative leaders. El

Alaoui (1997) noted that the number of cooperative members in 1993 was higher than the number of registered livestock breeders during the 1989 census. In an effort to improve the effectiveness of the cooperatives, the administration decided in 1994 to investigate cooperative composition and exclude all the members who did not meet membership criteria, such as migrant community members, government agents, and private investors.

5.1.2 The neglect of traditional access options

The neglect of access options was one of the factors that constrained pastoral systems following the recognition of tribal rights on their territories. In the context of pastoral cooperative systems, it is important to integrate traditional access options. Moreover, introducing pasture-improvement activities adds another complexity to the problem because range quality does not solely depend on rainfall or climatic changes, but also on improvements through investment activities. What are the criteria for granting access to outsiders? Should these access options be based on reciprocal arrangements, or should they evolve? Should charging fees for the use of these resources be considered?

5.2 Redefining the rights of pastoralists: The rural code in Niger

The shrinking of pastures following intensification and extension of agriculture renders pastoral activities very precarious. Questions such as the following arise: How well does the Rural Code secure the resources that are necessary for pastoralists' survival? How can herders be assured access and control over managing these resources?

Articles 23 to 31 of the Rural Code address the ambiguous issue of pastoral-resource rights by insisting on common access and introducing the concepts of terroir d'attache and priority use-rights. The code considers pastoral resources as a single resource and grants to all livestock producers "free access" (Article 23) and common use-rights to these resources (Article 24). These provisions are contrary to the situation described in Morocco because the code emphasizes the "openness" of pastoral resources. To correct some of the inefficiencies that may occur under such a system, pastoral communities were granted priority use-rights on their grazing areas but have to grant access to water, pastures, and grazing corridors (Article 28) according to customary rules. Besides, to facilitate herd movements, the rural code classifies transhumance routes and grazing corridors as part of state or community's domain and grant common use-rights to herders, and to livestock owners and breeders. The major shortcomings of this law are the confirmation of the 87-077 Decree, the limited ability to exclude other herders, and grants of private property.

5.2.1 Confirmation of the 87-077 Decree

The 87-077 Decree defined pastures in agricultural areas and granted use rights to herders and managerial roles to village and canton chiefs. In the pastoral zone, which receives less than 200 mm of rainfall, this situation did not pose any problem because, in most cases, traditional canton and village chiefs were also the leaders of pastoral communities. However, as discussed above, in areas where chiefs were not from pastoral communities, many disputes occurred following grants of land by chiefs on pastoral areas (Ngaido 1993b; Ngaido 1994b).
In addition, ethnicity still plays a very important role in the way people perceive resources and ownership. It is rooted in the mentality of many Nigerians that pastoral groups, *Fulani* or *Tuareg,* do not and cannot own land. Hence, the mere fact of being a member of a pastoral group undermines *de facto* herders' possibility to claim ownership rights. These different perceptions and expectations will frame the challenges that will be affecting rural areas and the interaction between different rural actors.

5.2.2 Limited ability to exclude other herders

Granting common ownership of pastoral resources to all pastoral communities and granting only priority use-rights for these resources to local pastoral communities hinders the ability of these communities to effectively regulate or exclude outsiders. Furthermore, by focusing on customary rules of resource access and use, the law does not provide incentives to local communities for managing these resources sustainably, because existing structures lack the capacity to enforce these customary rules. The ability to exclude is even more important when improvements in productivity must come from long-term investments, and leads to the question as to who will be responsible for the cost of pasture improvements.

5.2.3 Grants of private property

The Rural Code stipulates that, "if their activities necessitate fixed implant on delimited parcels," herders can be granted private property from these parcels if they have customary ownership rights. This provision is a mechanism for sanctioning existing encroachment on common grazing areas for cultivation and will foster more encroachment.

The complexity of tenure issues in Niger, which result from internal dynamics of the traditional tenure system and changes brought about by government policies, challenges implementing the Rural Code, and the effectiveness of the tenure commissions. The law has its merits, as it attempts to secure livestock production. However, these major shortcomings need to be addressed in the complementary text

that is supposed to be draft guidelines governing access and use of pastoral resources.

5.3 Development of market-based access options

Pastoral communities are facing a growing scarcity of their own pastoral resources, which are being encroached upon and used for cropping, and which are being threatened by the breakdown of access options based on reciprocity. It is crucial to determine how reciprocal access options might be replaced with new options that can sustain livestock production in dryland areas. Many pastoral communities and individuals are already devising new strategies to cope with the numerous constraints they face by progressively shifting to more market-based access options and relations. This transformation is, however, very different between Morocco and Niger.

In Morocco, supplementing is becoming very important for pastoral systems because of the lack or degradation of common pastures. Herders and livestock owners are making their own access option arrangements with farmers or community leaders (Berque 1934; El Youssoufi 1976). Anoun et al. (1996) found that, among Oulad Fares, small livestock owners used supplementation for four months (September through December), while large owners used supplementation for nine months (April through December). Feeds were either produced or purchased locally. In addition, monetary and "quarter-production" contracts[3] are becoming the dominant types of grazing contracts between herders and livestock owners. Under the old system of "one-half' grazing contracts, livestock owners and herders shared production risks. Under present contractual arrangements, however, risks are completely borne by livestock owners (El Youssoufi 1976; Anoun et al. 1996). It is argued that frequent drought and the high cost of shepherding, together with the shift of collective pastures into individually cultivated lands, have contributed to the development of fattening activities and sedentary livestock-production systems.

In Niger, the major transformation is found with respect to access to crop residues. Contrary to the Moroccan case, farmers pay herders to graze on their fields. Direct deposit of manure by herds is an important strategy for improving soil fertility in agricultural fields (Murwira 1995; Bosma et al. 1995). Traditionally, herders had free access to harvested fields because both parties benefited from this activity. Pastoralists had good feed on their way to their own villages, while farmers improved soil fertility. Since the droughts of the 1970s and 1980s, however, farmers are increasingly contracting Fulani herders, who are paid in millet according to the number of animals and duration, to graze on the crop residues (Gavian 1993; Hopkins et al. 1995). A survey conducted in 1994 by the Land Tenure Center team

[3] The herder receives one-quarter of the herd production

found that for 105 fields, 7% of the cultivators paid cash for animals to graze their fields, 47% paid with millet, 30% engaged in a some form of tenancy contract to guarantee deposits of manure, and 16% used their own herds. Tenancy contracts (30%), which is the second largest mode used by landowners to manure their field, highlights the increasing participation of herding communities in agricultural production.

6. Conclusion: How to better target state intervention

So far, new pastoral development initiatives have been centered on introducing new technological innovations and institutional reforms. However, in most cases, these initiatives disregarded (1) the production strategies and access options developed by pastoral communities to ensure their livelihood and reduce production risks, (2) were divorced from existing socioeconomic and political constraints. and (3) focused on narrowly defined "community" resources. If the future solution of pastoral communities depends mainly on their internal resources, then what are the institutional mechanisms that will ensure the welfare of pastoral communities?

There are two institutional reform pathways for developing pastoral systems in dryland areas: privatization and common property. However, for each pathway, the role of the state is crucial and should include pastoral production strategies and various market and institutional access options, which pastoralists are presently using to sustain their livelihood.

In the case of Morocco, the opportunistic behavior of community members and breakdown of traditional access options suggest that privatization might be the most desirable pathway. This would be also be the best way to promote the improvement of pastoral resources. Ngaido et al. (1997) found that agropastoralists were making long-term improvements on their tribal lands where they were assured long-term usufruct. Additionally, the Tunisian government, which also recognized tribal ownership rights in the 1910s, has also been pushing for individualization and privatization of tribal properties. It is important to remember, however, that there are many equity issues that need to be taken into consideration during the evolution process toward privatization, and land grabbing for the purpose of establishing a claim may lead to increased degradation in the short term. Another interesting aspect in the Tunisian case that may be applicable to the Moroccan case, is that the Tunisian government has made a provision in the Forest Code that allows communities that still have collective tribal lands to work with Forestry Services on a contractual basis. Under this contract, the community gives the Forest Services the responsibility to

improve their common pastures. In return, the Forest Services will control the management and uses of improved pastures and levy an access fee, of which two-thirds will be kept by the Forest Services to recoup the improvement costs. Such provisions have many positive effects on the sustainability of resource use and cost sharing of resource improvements.
In the case of Niger, the pastoral development pathway will consist of recognizing and granting ownership rights to pastoral communities similarly to Morocco. Priority use rights, as granted by the Rural Code, will not permit rural communities to effectively manage their pastoral resources and conflicts between herders and farmers are likely to increase. It is important that complementary texts regarding pastoral resources provide a stronger role to pastoral communities in managing their resources and only grants a policing role to the farming communities to reduce land appropriations. If the grazing areas are to remain under the control of farming communities, there will be a lot of incentives for farmers and community leaders to transform these lands into croplands.

There is no going back. Pastoral communities are dynamic and have developed various strategies through the years to cope with socioeconomic, environmental and political pressures. Moreover, many traditional institutions have lost their effectiveness. That is not to say they are not relevant, but rather that customary legitimacy as the basis for allocating decision-making roles may not presently be desirable to community members. As such, states should promote flexible frameworks, which provide more options to community members, because it is unlikely that traditional access options based on reciprocity could be recreated and made functional solely through legal frameworks.

Moreover, given the individualization of production strategies, the states' role may be to promote institutions that are likely to be accepted by pastoral communities and enable better interaction between communities, members, and users. In both countries, states should promote the development of market relations, which are already dominant in pastoral transactions, between communities and users. Market relations are also important for improving pastoral resources because one of the key resource management issues is defining relations between communities when one of them has improved their pastures. Reciprocity may not be the proper mechanisms, because only one party is paying for the costs of pasture improvement while the other is reaping full benefits of improvements. The best way to secure access options and at the same time promote sustainable resource would be to develop market-based access options, which require users to share the costs of improving or maintaining the resource base.

References

Anoun, N., M. Benharzallah, O. Benslimane, B. Gandega, and A. Maatougui. 1996. Etude de I'etat actuel des ter res de parcours dans le Maroc Occidental Central: Cas des communes rurales de Oulad Fares El Halla (El Borouj) et Oulad Fennane (Oued Zem). Serie de Document de Travail No. 58. International Commission for the Rights of Aboriginal People/International Institute of Agronomic Research, Centre d'Aridoculture de Settat, Morocco.

Bassett, T. J. 1988. Land use conflicts in pastoral development in northern Ivory Coast. Pages 131-154 ***in*** Land in African Agrarian Systems. University of Wisconsin Press, Madison, Wisconsin, USA.

Behnke. R.H., I. Scoones, and C. Kerven (eds.). 1993. Range Ecology at Disequilibrium: New Models of Natural Variability and Pastoral Adaptation in African Sacannas. Overseas Development Institute (ODI), London,UK.

Berque, J. 1934. Contribution a l'Etude des Contrats Nord-Africains (Les Pactes Pastoraux des Beni Meskine). Jules Carbonel, Algiers, Algeria.

Besley, T. 1995. Property rights and investment incentives: Theory and evidence from Ghana. ***Journal of Political Economy*** 103 (5): 903-937.

Blaikie. P. 1985. The Political Economy of Soil Erosion in Developing Countries. Longman Publications, London, UK.

Blaikie, P. and H. Brookfield. 1987. Land Degradation and Society. Routledge Publications. New York. USA.

Bos, B. and G. Peperkamp. 1989. Pastoralists and their struggle for land: Example from Africa South of Sahara.Pages 31-47 ***in*** The Struggle for Land Worldwide Peperkamp (G. and C.H.W. Remie, eds.). Saarbrucken. Fort Laurdale, USA.

Bosma, R.. M. Bengaly and T. Defoer. 1995. Increasing the role of ruminant livestock in the maintenance of soil organic matter for sustainable production systems in southern Mali. Pages 171-182 ***in*** Livestock and Sustainable Nutrient Cycling in Mixed Farming Systems of Sub-Saharan Africa (Powell, J.M., S. Fernandez-Rivera, T.O. Williams, and C. Renard, eds.). Volume 11: Technical Papers. Proceedings of an International Conference, 22-26 November 1993. International Livestock Centre for Africa (ILCA), Addis Ababa, Ethiopia.

Bouderballa, N., M. Chraibi, and P. Pascon. 1977. La question agraire au Maroc. ***Publication du Bulletin Economique et Social du Maroc*** No. Double: 133-134.

Bromley, D.W. 1984. Property Rights and Economic Incentives in Resource and Environmental Systems. University of Wisconsin Press, Madison, Wisconsin, USA.

Bromley, D.W. 1991. Environment and Economy: Property Rights and Public Policy. Blackwell Publishers. Cambridge, Massachusetts, USA.

Bruce, J.W. 1986. Land Tenure Issues in Project Design and Strategies for Agricultural Development In Sub-Saharan. LTC Paper No. 128. Land Tenure Center. University of Wisconsin, Madison, Wisconsin. USA.

Bruce, J.W. 1989. The variety of reforms: A review of recent experience with land reform and the refonn of land tenure. with particular reference to the African experience. Paper prepared for the Conference on Human Rights In a Post-Apartheid South African Constitution. September 1989, Columbia University. USA.

Chiche, J. 1997. A la recherche d'une definition des status foncier au Maroc. ***Option***Méditerranéennes Serie A No. 32: 15-30.

Ciriacy-Wantrup, S. V. and R. Bishop. 1975. Common property as a concept in natural resource policy. ***Natural Resources Journal*** 15 (October): 7 13-727.

Cousins, B. 1995. A role for Common Property Institutions In Land Redistribution Programmes in South Africa. SARLs Gatekeeper Series, SA 54. International Institute for Environment and Development, London, UK.

Delehanty, J.M. 1988. The northward expansion of the farming frontier in 20th century Central Niger. PhD Thesis. University of Minessota, Minessota, USA.

El Alaoui, M. 1997. Les cooperatives pastorales "ethno-lignageres" du Maroc oriental. Pressuposes et attendus d'une "greffe" cooperative. ***Options*** Méditerranéennes Serie A No. 32: 129-148.

El Youssoufi, M. 1976. Perimetre Pastorale d'El Brouj. Memoire de 3eme Cycle Agronorne. Institut Agronomique et Veterinaire Hassan 11, Rabat, Morocco.

Evangelou, P. 1984. Livestock Development in Kenya's Maasailand. Westview Press. Boulder. Colorado. USA.

Gavian, S. 1993. Land tenure and soil fertility management in Niger. PhD Thesis, Stanford University, California, USA.

Homer-Dixon, T.F., J.H. Boutwell, and G.W. Rathjens. 1993. Environmental change and violent conflicts. ***Scientific American*** (February): 38-45.

Hopkins. J.C., P. Berry, and P. Gruhn. 1995. Soil fertility management decisions: Evidence from Niger. Report to USAID/Niger.

Horowitz, M. M. 1989. Victims of development. Development of anthropology network. *Bulletin of the Institute for Development Anthropology* 7 (2): 1-4

IAVHII and USU (Institut Agronomic et Veterinaire Hassan II and Utah State University). 1993. Strategie de developpement des terres de Parcours au Maroc. Phase II. Bilan des actions de developpement des zones pastorales au Maroc. Rabat, Morocco.

Jodha, N.S. 1985. Rural Common Property Resources: A Growing Crisis. SARLs Gatekeeper Series, SA 24. International lnstitute for Environment and Development, London, UK.

Kirk, M. 1995. Technological and institutional changes: Livestock-keeping systems in the Sahel. *Animal Research and Development* 34: 17-35.

Knox McCulloch, A. and P. Hazell. 1998. Property rights institutions for the development of fragile lands. Paper presented at the International Conference on Strategies for Poverty Alleviation and Sustainable Resource Management in the Fragile Lands of Sub-Saharan Africa, 25-29 May 1998, Entebbe, Uganda.

Lawry, S.W. 1990. Tenure policy toward common property natural resources in sub-Saharan Africa. *Natural Resources Journal* 30 (Spring): 403-422.

Lewis, J . 1981. Descendants and crops: Two poles of production in a Malian peasant village. PhD Thesis, Yale University, USA.

Mahdi, M. 1997a. Le statut collectif des parcours entre le consensus de la collectivite et l'action individualisee. *Options Mediterraneennes* Serie *A* No. 32: 25.

Mahdi, M. 1997b. Strategies paysannes et innovations techniques au Maroc. Pages 421-440 in Politiques Agricoles et Strategies Paysannes (M. Elloumi, ed.). ALIF/Institut de Recherche sur le Maghreb Contemporain. Tunis, Tunisia.

MAMVA. 1994a. Situation du secteur de l'elevage. Tome 1. Rabat, Morocco.

Masri, A. 1991. The tradition of Hema as a land tenure institution in arid land management. *The Syrian Arab Republic:* 61: 1-8.

Murwira K.H., M.J. Swift, and P.G.H. Frost. 1995. Manure as a key resource in sustainable agriculture. Pages 13 1-148 *in* Livestock and Sustainable Nutrient Cycling in Mixed Farming Systems of Sub-Saharan Africa (Powell, J.M., S. Fernandez-Rivera, T.O.Williams and C. Renard, eds.). Volume II: Technical Papers. Proceedings of an International Conference, International Livestock Centre for Africa (ILCA), 22-26 November 1993, Addis Ababa, Ethiopia.

Nassif, F., M. Boughlala, and T. Ngaido. 1997. Farmers and communities in low rainfall areas of Morocco: Their decision-making environment. Paper prepared for The Property Rights Component of the Mashreq and Nesheiwat, K. 1991. Socio-economic aspect of the traditional Hema system of arid land management in Jordan. FAO, Rome, Italy.

Nesheiwat, K. 1991. Socio-economic aspect of the traditional hema system of arid land management in Jordan. FAO, Rome, Italy.

Nesheiwat, K. 1992. Current situation and future potential of dry rangeland in Jordan. ICARDA Aleppo, Syria.

Ngaido, T. 1993a. Land use conflicts in western rural Niger: Kollo and Tillabery Arrondissements. Niger Discussion Paper No. 1. Land Tenure Center, University of Wisconsin, Madison, Wisconsin, USA.

Ngaido, T. 1993b. Implementing the rural code: Perceptions and expectations of rural Niger. Discussion Paper No. 7. Land Tenure Center, University of Wisconsin, Madison, Wisconsin, USA.

Ngaido, T. 1994b. Natural resource management (NRM) or decision making management (DMM): The tenure question in the Africare Goure Project. Paper prepared for Africare-Niger.

Ngaido, T. 1996. Redefining the boundaries of control: Post-colonial tenure policies and dynamics of social and tenure change in Western Niger. PhD Thesis. University of Wisconsin, Madison, USA.

Ngaido, T. with contributions from M. Abbassi, A. Baalbaki, M.S. Bachta, M. Boughlala, P. Hazell, A. Khnefis, M. Malki, F. Nassif, S. Nasser, K. Neshiewat, T. Nordblom, and N. Redjel. 1997. Land improvements and sources of income in low rainfall areas of the Mashreq and Maghreb Region: Do property rights matter? Pages 101-138 *in* Agricultural Growth, Sustainable Resource Management and Poverty Alleviation in the Low Rainfall Areas of the West Asia and North Africa (Chaherli, N., P. Hazell, T. Ngaido, T. Nordblom, and P. Oram, eds.). German Foundation for International Development (DSE), Feldafing, Germany.

Ngaido, T., M. Boughlala, and F. Nassif. 1998. Tribal use-rights or private rights? Effects of property rights on land improvements, productivity, income generation in the low rainfall areas of Morocco. Paper presented at

the Policy and Property Rights Workshop. 26-29 November 1998, Hammamet, Tunisia.

Pascon, P. 1980. ldees et enquetes sur la campagne Marocaine. Societe Marocaine des Editeurs Reunis, Rabat, Morocco.

Peperkamp, G. 1986. Land use competition and conflicts in Kenya's marginal areas as exemplified by the situation in Laikipia and Meru District. Publication No. 45 of the Study Group for Human Geography of Developing Countries. Institute for Geography and Planning of the Catholic University, Nijmegen, The Netherlands.

Place, F., M. Roth, and P. Hazell. 1994. Land tenure security and agricultural performance in Africa: Overview of research methodology. Pages 15-40 ***in*** Searching for Land Tenure Security in Africa (Bruce, J.W. and S.E. Migot-Adholla, eds.). Kendall/Hunt, Dubuque, Iowa, USA.

Qarro, M. 1997. Evolution des systemes d'elevage et leur impacts sur la gestion et la perrenite des resources pastorales en zone arides (region du Tafilalt. Maroc). ***Options*** *Méditerranéennes* Serie A No. 32: 93-96.

Rose, L.L. 1992. Disputes in common property Regimes (CPRs). Draft paper. Land Tenure Center, University of Wisconsin, Wisconsin, USA.

Staar. M.A. 1986. Risk, environmental variability, and drought induced impoverishment: The pastoral economy of central Niger. Discussion Paper No. 16. African-American Issues Center, Boston, Massachusetts, USA.

Swallow, B.M. 1994. The role of mobility within risk management strategies: pastoralists and agropastoralists. SARLs Gatekeeper Series, SA 47. London International Institute for Environment and Development, London, *UK*.

Vedeld, T. 1992 Local institution building and resource management in the West African Sahel. Forum for Development Studies No. 1.

Wachter, D. 1992. Farmland degradation in debeloping countries: The role of property rights and an assessment of land titling as a policy intervention. LTC Paper 145. Land Tenure Center, University of Wisconsin Madison, Wisconsin. USA.

Wade, R. 1987. The management of common propeny resources: Collective action as an alternative to privatisation or state regulation. *Cambridge* ***Journal*** of ***Economics*** (11): 95-106.

The World Bank, 1995. Rangelands development in arid and semi-arid areas strategies and policies. Natural Resources and Environment Division. The World Bank, Washington, DC, USA.