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PARTNERSHIP FOR LIVESTOCK DEVELOPMENT, POVERTY ALLEVIATION & SUSTAINABLE GROWTH

Policy Note (October 2007)

Maintaining Mobility in Pastoral Systems in Sub-Saharan Africa

This ALive Policy Note on **Maintaining mobility in pastoral systems in Sub-Saharan Africa** is the result of a participative and consultative multi-step process of elaboration involving the main key-actors of the livestock development sector in Sub-Saharan Africa.

The recommendations were endorsed by the ALive Executive Committee on September 20, 2007.

Contents

This Policy Note was prepared by the ALive Secretariat, with inputs from Nikola Rass (LEAD), Cees de Haan, and Stephen Sandford, and comments from ALive Executive Committee members. It is a contribution to the ongoing review of the livestock sector policies in Sub-Saharan Africa. This publication is available online at www.alive-online.org.

It would be best used in combination with the ALive toolkit on drought at www.alive-online.org.

Executive Summary

Pastoral systems in Sub-Saharan Africa are highly heterogeneous, but they have one feature in common: mobility of livestock as an adaptive tool to the erratic ecological conditions of the arid and drier fringes of the semi-arid regions. The ability to move their herds over large distances - grazing the diffuse and scattered vegetation of the regions' rangelands and being able to take refuge to more favorable sites during droughts - was the foundation of their system, critical to their livestock and livelihoods. Mobility of herds has been shown as environmentally, socially, and in terms of productivity, the most appropriate form of land use in these arid and drier fringes of the semi-arid areas. However, while mobility of herds has been shown as the most appropriate use of resources in these areas, and has considerable advantages in the settlement of families; its limited unfavorable effects on income and nutrition can be overcome.

This mobile system is coming under pressure. Growing human populations are generating an increasing demand for food products and consequently, increased competition for natural resources. This situation destabilizes the effectiveness of the mobile pastoral production system, leads often to voluntary or involuntary settlement, and increases the vulnerability of pastoral people to drought. Government policies and programs tend to reinforce these trends. There is thus a need to facilitate the development of pastoral production systems in a changing environment.

However, the potential for increased pastoral livestock production in the arid and drier fringes of the semiarid areas is very limited, even in years with average rainfall. Growing pressure on grazing land by arable farmers, population growth in pastoral groups, and the efficient use of grazing resources already made by pastoral groups cause the pastoral land at maximum efficiency.

As a first policy thrust, alternative sources of income in and outside the pastoral system need therefore to be identified to alleviate poverty of the pastoral livelihoods.

But as a second thrust, it is also critical to allow continuous herd mobility. In defining such policy, care should be taken to distinguish between pastoral systems in the arid and in the semi-arid regions, since it is only in the arid regions where opportunistic grazing is the only mode of production which can make sustainable use of the drylands; whereas in the semi-arid areas other forms of land use have to be considered, especially agro-pastoral systems. Moreover, the scale and regularity of movements need to be considered. Thus, regional differences imply the need for different approaches and make a continent wide strategy inappropriate.

But also in pastoral areas, there are major differences that require decision-making between different policy objectives and policy options: they concern conflicts between the pastoralist and the arable farmer groups, conflicts between diverse interest groups among pastoral systems (e.g., poor, rich, young, old). Livestock thefts with violence are an important issue in some areas. Careful

distinction also has to be made between the different needs of the various forms of pastoral systems (nomadic, transhumant, agro-pastoral). Ensuring participation of all stakeholders in the process of policy making and the empowerment of marginalized groups is therefore an important part of policy making and could contribute to reduce conflicts.

The urgent need for action has led several development partners to develop action plans for the sustainable use of pastoral areas and improvement of the livelihoods of its users, in particular the African Pastoral Policy Initiative Framework implemented by AU-IBAR. This ALive Policy Note is fully in line with the AU-IBAR initiative.

Recommendations

1. **Implementing the overall vision by:**

- Identifying different ways to support growing populations in the drylands and defining the relative weight to be given to investments that promote out-migration versus investments in diversification and enhancement of the mobile pastoral production, with due consideration to age and wealth differences within the pastoral society;

- Assessing the trade-offs between the support for the different systems that compete over the natural resources of the drylands and elaborating the options of combined use of contested rangelands, and institutionalizing the relationships between arable farming and pastoral livestock keeping. In case no options of combined use can be elaborated, ways need to be found to avoid violent conflict, i.e.,, protection of emergency grazing reservoirs and livestock corridors from encroachment by farmers.

2. **Establishing or supporting legislation to:**

- Facilitate mobility of pastoral herds as the optimal strategy to make sustainable use of the arid zones in the drylands;

- Facilitate trans-boundary herd movements and establish regulations for trans-boundary movements to reduce disease risk;

- Promote the protection of key grazing areas and water access within the arid zones which are crucial for the pastoral systems since they serve as drought grazing reserves; and

- Promote, through enabling a flexible access to land and water, the co-habitation of competing interest groups in the arid and semi-arid zones of the drylands, with regulations of collaborative management.

3. **Defining the incentive policies and the required investments by:**

- Supporting the continued mobility of pastoral herds through the provision of appropriate services, such as the provision of mobile animal health services; the establishment of milk collection centers and mobile slaughterhouses; the introduction of modern communication technology on the state of rangelands and markets; the development of adapted education and training programs and the introduction of financial services;

- Investigating options to support the role of pastoral livelihoods as custodians of the drylands through policy options such as payment for environmental services.

0 Introduction

Pastoral systems in arid and semi-arid regions of Sub-Saharan Africa used to cope effectively and in an environmentally sustainable manner with the prevailing harsh and erratic ecological conditions of the region. The ability to move herds over large distances, to graze the diffuse and scattered vegetation of the regions' rangelands, and to take refuge in more favourable sites during droughts was the foundation of the system, and had been critical to livestock and livelihoods. However, the effectiveness of the pastoral systems is deteriorating quickly. Mobility of pastoral herds is constrained by national and administrative boundaries as well as the encroachment of other land use forms on livestock routes and watering areas. Furthermore, poverty induced settlement by pastoralists is leading to reduced mobility of pastoral herds.

This paper seeks to provide national and international policy makers with background information on whether and how to invest in mobility of pastoral systems in Africa. It illustrates the trends leading to sedentarization and the declining mobility of pastoral herds. This is followed by a description of the key underlying causes of these trends and their impacts on mobile pastoralists. It then provides a rationale for investments and ends with a discussion of the trade-off decisions and provides policy options in pastoral development.

• Forms of Mobility in Pastoral Systems in Sub-Saharan Africa

Pastoral systems in Sub-Saharan Africa are highly heterogeneous, but they have one feature in common: mobility of livestock as an adaptive tool to the erratic ecological conditions of the arid and semi-arid regions. In general, one can distinguish between the mono-modal rainfall setting of the Sahel, typified by north-south movements, and the bi-modal rainfall situation of East Africa, where relatively localized and more erratic movements are common[1].

The categorization of pastoral production systems[2] by scale and regularity of movement ranges from highly nomadic pastoral systems such as among the northern Mauritanians and Namibians, to transhumant pastoral systems such as the Nilotic tribes of East Africa, the Berber of the High Atlas, and herders in Morocco and Ethiopia, to agro-pastoral systems such as the settled populations in Zimbabwe who send their livestock short distances to pasture[3].

[1] Scoones, 1996

[2] In this paper we refer to pastoral production systems when we are strictly discussing the mode of mobile pastoral livestock production, whereas we use the term pastoral livelihoods to include all "the capabilities, assets and activities required for a means of living" (Carney, 1998).

[3] Niamir-Fuller, 2000

Past and recent trends

Population Growth, Urbanization and Increased Demand for Livestock Products

From 1968 to 1998 the population of Sub-Saharan Africa grew from 274 to 628 million[4]. On the one hand, population growth is leading to increasing conflict between different production systems over natural resources as well as an imbalance of natural resources and the needs within the pastoral production systems itself[5]. On the other hand, population growth induces a process of urbanization. Urban population grew at about 5% per annum while rural growth was at 2% or less[6]. Population growth, urbanization, and rising incomes are the driving forces for an increased demand in livestock products. The increasing demand presents an opportunity for better integration of pastoral products into the commercial livestock markets. But at the same time, the rapidly increasing demand for livestock products pushes against the traditional resource base for mobile pastoral livestock production that cannot expand at the same pace.

Sedentarization of Pastoralists

During the last two millennia, most arid and semi-arid regions of the world have witnessed an increasing sedentarization of pastoral populations. This process has gained momentum during the last century[7]. The origins of many towns in arid regions stem from the historical process of pastoral sedentarization. Northern Kenya is outstanding in this respect since most settlements and towns have only arisen in the past 50 or so years, and mobile pastoralism still characterizes large parts of the region[8]. Small towns such as Marsabit and Maralal in Kenya have undergone a significant 4-5 percent growth rate since 1990[9]. The process of increased settlement does not necessarily equate to less herd mobility. Therefore it is important to specify that in the context of this paper reduced mobility is understood as reduced herd mobility. It has been shown that sedentarization of families have considerable advantages in terms of access to services. There are, however, some limited unfavorable effects on income and nutrition, as shown by recent work in Kenya, but they can be overcome[10].

Reduced Mobility of Pastoralists and of Pastoral Livestock

Since the colonial period pastoral systems have experienced pressure to alter their mobile land use system. They have been exposed to various forces including division and relocation of pastoral territories among different countries as the outcome of colonial demarcation, and erroneous policies that bring about encroachment of crop agriculture and competition over resources between herders and wildlife. These forces accompanied by the process of population growth and integration into commercial markets have changed pastoral systems sometimes to the point of not being recognizable. The frequency and distance of livestock mobility has declined, as evidenced by a reduction in daily grazing radii around encampment points, reduction in movements among encampment points within a pastoral area, and decrease in the frequency and distance of historic transhumance movements[11].

[4] World Bank, 2000
[5] ALive/LEAD, 2006 - Sandford
[6] World Bank, 2000
[7] Niamir-Fuller, 2000; McPeak, John and Peter D. Little, 2004
[8] McPeak, John and Peter D. Little. 2004
[9] Little, Mc Peak et. al., 2006
[10] ALive/:LEAD 2006, Sandford
[11] Niamir-Fuller 2000, Homann, Rischkowsky et. Al., 2006; White, 1986

Causes

Causes of Increased Settlement

Settlement of pastoral people is taking place in response to various factors as summarized below[12]. A diagram describing the main linkages between the different causes is presented in Annex 1:

- **Drought**

One factor pushing many pastoralists out of the pastoralist system is the occurrence of long droughts, such as the major droughts of the 1970s and 1980s. In reaction to these droughts many herders in the Sahel were forced to move south and convert to agro-pastoralists and some settled completely[13]. It has been observed that in some areas (i.e., Kenya) the process of settlement is perpetuated by the continuous provision of food aid, which is often confined to areas around towns[14].

- **Inter-state limitations and conflicts**

As rangelands are mostly situated at the edges of nation states (e.g. the Saharawi and Tuareg in the Sahara, the Fulani/Peul in the Sahel, and the Somalis, the Borana, the Afar and the Karimojong in the Horn of Africa) inter-state disputes often involve pastoral lands and pastoral people. In reaction to violent conflict many pastoralists search refuge in camps and thereafter often remain settled.

- **Impoverishment**

Especially among impoverished pastoral households sedentary pastoralism in the vicinity of small towns, trade centres, famine relief stations, and mechanized water sources has become a widespread practice[15]. Although these households are settled and pursue alternative economic strategies, including cultivation, agro-pastoralism, small trade or urban wage labour, the majority of them remain committed to the raising of livestock in the Savannas and arid regions of Africa.

- **Exits**

A subgroup of more economically successful individuals builds such large herds that they can convert some of the wealth in livestock into wealth in land or invest in town-based livelihoods. These individuals are moving into the settled sector and either drop out of the nomadic sector or become absentee herd owners.

These processes are often supported by government policies that induce sedentarization:

- Involuntary settlement of pastoralists by Governments due to dam construction, famine, civil war or in order to prevent conflict at the frontiers[16].
- Promotion of settlement by Governments assuming that this would intensify and commercialize animal production, and provide cheaper meat to urban areas.
- Promotion of settlement by Government to facilitate administration and delivery of social and livestock specific services[17].
- Lack of budget allocations on infrastructure and social services as - sometimes intentionally, and sometimes without clear rationale - central governments disregarded the spatial and temporal needs of mobile pastoralists in access to these services[18].

Causes of Reduced Herd Mobility

- **Increased Sedentarization**

Reduced herd mobility is often caused by poverty-induced settlement of herders who move closer to urban centres in order to obtain better access to the milk market and to look for alternative income generating opportunities. Having a small herd and no extended family network, poor herders generally do not have the means to herd their goats and sheep separately and to seasonally move their herds outside of a six-km radius of their settlement[19].

The more economically successful pastoralists pursuing town-based livelihoods can still maintain large and highly mobile herds. Their herds are either moved by other family members or by sub-contracted herders[20]. However, it has also been reported that sedentary absentee livestock owners who have sub-contracted hired herders are putting restrictions to livestock movements in order to facilitate control.

[12] Azarya, 1996
[13] Niamir-Fuller, 2000
[14] Huysentruyt, Barrett et. Al., 2004
[15] O'Leary, 1990
[16] Larsen and Hassan, 2003
[17] Pratt e.t al.. 1997
[18] Pratt e.t al.. 1997
[19] McPeak and Little. 2004
[20] ALive/LEAD Jonas Djenontin, 2006

- **Restricted Access to Grazing Resources and Transhumance Routes**

Access to grazing resources and transhumance routes is restricted by the following forces:

- **Expansion of cropping systems**

The intensification of agriculture-introducing techniques such as irrigation schemes or more drought resistance crop varieties, has led to the advancement of the agricultural frontier in semi-arid areas. For example, in Mauritania there has been a northward shift of the arable farming boundary by more than 500 km[21]. From 1950, in East Africa, there has been a significant transformation of grazing land to crop land. For example, in Mt Kilimanjaro/Kenya 13 percent of the rangelands has been converted to rainfed agriculture[22].

- **Changes in farming practices**

A process of homogenisation of production systems is observed in semi-arid Africa, with farmers increasingly keeping livestock and herders increasingly engaging in crop cultivation[23]. The accumulation of livestock by farmers undermines the reciprocal logic of farmers allowing pastoralists' herds to graze crop stubble in order to benefit from the use of manure as fertilizer. Pastoralists thereby lose access to an important feeding resource unless they engage in farming themselves and pursue the same exclusive user rights in land tenure.

- **Increased areas under protection**

With increasing concern for the conservation of biological diversity, the number and size of protected areas are increasing. In 2003, 8.7% of Western and Central Africa and 14.6% of Eastern and Southern Africa were protected[24]. For a long time the general view has been that wildlife conservation and livestock keeping are incompatible forms of land use and should be kept apart, this separation has reduced access to pastoral grazing lands and important key sites in the transhumance cycle, such as valley bottoms, where the grass remains green also in the dry season. This restriction in access to the key sites has in turn reduced mobility.

- **Restrictive methods of disease control**

In the context of a modernized and globalized livestock industry, mobile and opportunistic natural resource use by pastoralists is severely restricted by current methods of disease control such as Sanitary Cordon Fences and strict regulations for the international export of livestock products[25].

- **Fragmentation of Communities by Frontier Lines**

The drawing of state boundaries by the European colonial powers neglected the interest of local land use patterns. Centralized administrations restricted pastoral movements within administrative units, irrespective of the ecological needs of the pastoralists, even dividing the same pastoral ethnic group over different States. Traditional transhumance routes have little regard for national frontiers in West Africa; for example, herders arrive in Ivory Coast or Ghana from Burkina Faso or Mali; along transhumance routes between western Mali, Mauritania and Senegal; or between Niger, Nigeria and Benin.

In many cases, the division and relocation of pastoral territories results in enduring political tension, often directly involving pastoralists. Commercialization and availability of modern weapons give rise to the development of markets of violence[26] and trigger increasing violent conflict, as observed in the Karamojong cluster. Avoidance of remote rangelands due to risk of violent conflict has become common and restricts herd movements[27].

- **Inappropriate Policies**

In the past, these processes have often been accompanied by policies which disregarded the basic foundations of the mobile pastoral production system.

- **Land Use Policies and Legislation**

During and following the colonial period, resource access systems were established which disregarded existing customary tenure systems and undermined relevant local authorities, in particular with regard to the use of natural rangelands[28]. Land became either owned by the State or was privatized to serve colonial settlers or national elites. The predominant development model from the mid 1960s to the

[21] Nori and Switzer, 2005
[22] Olson, Misana et. al., 2004
[23] Toulmin, 1983; Winrock International, 1992; Bourn and Wint, 1994
[24] IUCN and UNEP, 2003
[25] ALive/LEAD Daniel Mc Gahey, 2006
[26] Markets of violence are understood as economic areas dominated by civil wars, warlords or robbery, in which a self-perpetuating system emerges and links non-violent commodity markets with the violent acquisition of goods, , Elwert, 1999.
[27] Morton, 2001
[28] Kirk, 2000

early 1980s further alienated the system by introducing ranches with reduced stocking rates. Based on the misconception that communal rangelands imply open access and thereby induces pastoral overgrazing and degradation, the main interventions imposed the privatization of rangeland, fencing, and high input range improvement technologies managed by group ranches[29]. Although the usefulness of the concept of "carrying capacity" on ranches has now been superseded by the concepts of the non-equilibrium ecology of arid lands acknowledging the advantages of opportune and flexible land use, legislation in many countries is still lagging behind. For example, in some areas, subsidy of livestock ranching at the expense of rangelands for pastoralists and wildlife is still ongoing[30].

- **Unfavourable Incentive Policies**

At international level, the imports of beef, subsidized by the EU, in particular, under its Common Agricultural Policy, has favoured African governments, because it provided cheap meat to the urban consumers. The reduced markets and incomes, in particular, of West African pastoralists, caused them to get involved in arable farming to supplement their subsistence food and income needs and to give up their mobile lifestyle. These subsidies are now being phased out.

At national level, government policies to attain food security have favoured cropping systems for cereals over pastoral systems through subsidizing of input prices such as agricultural equipment and fuel[31]. These policies, in turn, favoured crop-encroachment in pastoral areas.

[29] Niamir-Fuller, 1999; Majok and Schwabe, 1996; Fratkin, et.al., 1994; Scholz, 1996
[30] Cullis and Watson, 2004
[31] Pratt, et, al., 1997

Impact of declining mobility

The declining mobility of pastoral herds, is leading Sub-Saharan African pastoralists in a downward cycle of environmental degradation, decreased herd productivity, and increased vulnerability to drought and poverty.

- **Environmental Degradation**

Overgrazing has long been considered the primary cause of desertification in Africa. However, recent work has clearly demonstrated that allowing the proliferation of different land uses, such as uncontrolled expansion of low input cropping systems, accompanied by uncontrolled bush fires, wood fuel collection and increasing numbers of sedentary livestock without any coordination, has a major influence on land degradation[32].

The non-equilibrium ecological theory successfully proved that in non-equilibrium ecologies (such as exists in SSA in the arid and northern fringes of the semi-arid areas) limiting mobility of livestock or reducing seasonal dependence on rangeland resources by providing feed inputs are much more likely to affect the range resources negatively than increasing the size of the stock. Due to strong seasonality, the risk of overgrazing that damages the environments is reduced to short periods and consequently, to confined areas. Although serious degradation and desertification are evident around permanent settlements and water-points, this is less the case in open rangelands under extensive mobile production systems[33].

Less information exists on under-grazing of rangelands abandoned because of settlement elsewhere. It has been emphasized that too few large herbivores (domestic or wild) lead to wide plant spacing and a high percentage of bare soil between plants and thus increased degradation[34]. Observations in North-Eastern Senegal show that under-grazing resulted in lower palatability of primary productivity, lower phosphorus content of topsoil, lower herbaceous density, and lower biomass production[35].

- **Declining Herd Production**

Settlements of pastoral people increase the pressure on the fragile resource base around these towns. This leads to a pattern of localized degradation that further diminishes the productivity of the livestock held by the town-based poor[36]. It is reported that pastoralists in Borana/Ethiopia observed a direct impact of degraded rangelands on reduced milk production and conception rates[37].

Table 1: Milk output from mobile and sedentary herds, Southern Sudan[38]

Degree of Mobility	Average yield per cow per day	
	Dry season	Wet season
Mobile	0.73	1.50
Sedentary	0.34	0.83

- **Increased Vulnerability to Drought**

Reduced mobility and loss of drought grazing reserves might be the main factors increasing the vulnerability of pastoral people to drought[39]. Moreover, as a result of climate change it is likely that meteorological droughts will become more frequent and more severe in the decades to come. Moreover, the impact of meteorological drought on pastoral people has grown because their capacity to anticipate, cope, resist, and recover from the impact of drought has diminished. Long distance mobility is required especially to adapt to the hazards of drought. It has been documented that reduced mobility has a relationship with increased herd loss. Using the number of water points as an indicator for mobility, the more mobile herds (using on average 3.3 water points) lost only 5 percent of their herds, whilst the more settled herds (using on average 1.1 water point) lost up to 85 percent over the drought period March 2000 to September 2001 in Sudan,[40].

[32] UNEP, 2000; Leloup, 1994
[33] Behnke, Scoones et. al., 1993; Ellis and Swift, 1988, Hiernaux ,1996; De Leeuw, P.N. and Reid, R.S., 1995
[34] ALive/LEAD Savory, 2006
[35] Niamir-Fuller, 2000
[36] Schwartz et. al., 1991; McPeak, 2003, Niamir, 1982 (see table 1)
[37] Homann, 2004
[38] Niamir, 1982
[39] ALive 2006
[40] McPeak and Little, 2004

It has been shown that in the dry season or in dry years, livestock depend on relatively small patches of land within the wider dryland landscape, which constitute key resources that sustain animals in times of fodder shortage[41]. Due to their higher agricultural potential, these key sites are particularly susceptible to encroachment by farmers, resulting in the exclusion of pastoralists from these key pastoral resources. This leads to significant disruption of the annual transhumance cycle and increased vulnerability of pastoral people to drought[42].

- **Growing Poverty**

Worldwide pastoralists constitute one of the poorest population sub-groups, and among African pastoralists the incidence of extreme poverty ranges from 25 to 55 percent[43]. Standards of living are falling among the mobile pastoralists in Africa, often resulting in settlement and the need to rely on alternative income sources, such as cropping and hired labour, out-migration towards urban centres, or food aid[44]. Sedentarization and reduced mobility in turn reduces productivity of livestock and increases the vulnerability of pastoralists to drought, which leads to a downward spiral of poverty. Pastoral drought also affects the terms of trades of livestock markets at the disadvantage of livestock keepers and lowers the reliability of supply of livestock to markets. Given the limited opportunities for income diversification, pastoralists with a narrow asset base easily fall into poverty traps.

[41] Southgate and Hulme, 2000; Woodhouse et. al., 2000
[42] Niamir-Fuller and Turner, 1999
[43] Rass, 2006
[44] Niamir-Fuller, 2000

Maintaining Mobility in Pastoral Systems in Sub-Saharan Africa

Rationale for Involvement

Pastoral societies face challenging changes imposed by socio-economic and climatic pressures and have only managed to survive through adaptation. Therefore instead of promoting the static preservation of traditional pastoral systems, there is a need to support the transition out of the traditional system[45]. This should have a two pronged approach: First, reducing human and livestock numbers, by facilitating out migration and second, investing in the support of mobile pastoral production systems. Such a policy would yield socio-economic and ecological benefits as described below:

Maintaining Efficient Natural Resource Use

It has been demonstrated that although mobile pastoral production systems achieve lower yields per animal than 'modern' ranching systems, pastoralism is more productive per unit of land than the latter[46]. The full contribution of mobile pastoralism as presented by the concept of Total Economic Values (TEV) shows that mobile pastoralism makes optimal use of scarce resources with minimal environmental costs[47]. Healthy natural rangelands and water resources, which mobile pastoralism can foster, contribute to many more aspects of interest to economic and social development such as biomass fuels, human and veterinary health care products, shelter materials, cultural values, environmental services, such as carbon sequestration, bio-diversity conservation, and sometimes, eco-tourism. Especially under conditions of increasing climate change, mobile pastoralism represents an important reservoir of adapted livestock breeds and knowledge and experience on good environmental management[48].

Supporting Sub-regional and National Economies

Mobile pastoral production could be an important force in regional development. The semi-arid and arid areas in the Horn make up 70 percent of the total land area, which provide an average of 20 to 30 percent of GDP, with substantial sub-regional trade[49]. In West Africa, the pastoral sector contributes between 10-20 percent of total GDP in Mauritania, Mali, Niger, and Chad and there is active trade with the Sahelian countries (e.g., Burkina Faso, Mali, Niger) in the arid and semi-arid parts of the region as exporters of livestock to the humid coastal countries (e.g., Cote d'Ivoire, Ghana, Nigeria) as net importers. In Chad, for example, the importance of the pastoral systems is undeniable as pastoral production contributes 53% to the agricultural GDP and give more than 100 billion FCFA tax income per annum to the state from animals for local markets and export towards neighbouring countries[50].

Reducing Poverty

Sub-Saharan Africa is salient because the majority of the world's extremely poor pastoralists (54%) reside in the region[51]. Supporting the continuous mobility of pastoral herds would help to upwind the downward spiral of poverty induced settlement. In general supporting the mobility of pastoral systems would be of immediate benefit to the approximately 50 million pastoral people living in the arid areas[52], covering some of the most deprived populations in the region. The commitment to achieving the MDG of halving poverty levels by 2015 carries the moral obligation to include pastoralists.

Increasing Resilience against Drought and Enhancing Food Security

Enabling the traditional practice of long distance movements to drought resistant areas (such as oasis gardens, river valleys, forests) and protection of these safe havens against encroachment would increase the resilience of pastoral people against drought and thus contribute to sustainable development, poverty reduction, and food security[53]. Enhancing the condition of natural rangelands and water resources for pastoral production would simultaneously improve wild food availability, provide critical micro-nutrients, and diversify regional rural economies.

Reducing Violent Conflicts

Mobile pastoralists are more than most other groups involved and/or impacted by enduring social tensions often resulting from competition over natural resource uses. Such cases concern both trans-national and national situations such as in Senegal/Mauritania, Cote d'Ivoire, Burkina Faso, Kenya/Somalia, Tanzania, Benin, Sudan[54]. Policies are needed in order to prevent an increase in livestock thefts, violence, riots, civil war, poverty, and destitution due to conflicting interest.

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[45] ALive/LEAD 2006 - Hezekiah G. Muriuki, Padmakumar, Daniel M. Komwihangilo, Chi Lawrence Tawah

[46] Scoones, 1994 b; Bremann and de Wit, 1983

[47] Hesse, 2006

[48] Hesse, 2006; CGRFA/WG-AnGR, 2006

[49] Little, 1996

[50] Alive/LEAD 2006 - Mahamat Bechir

[51] Rass, 2006

[52] Rass, 2006

[53] ALive/LEAD 2006 - Guilherme Lanna Reis, Tony Rinaudo, Colin Nott, Michel Ferry, Slimane Bedroni and Charles Okoli; Alive 2006

[54] Van Driel, 2001; Shazali and Ahmed, 1999

The Road Ahead: Defining the Overall Vision and Development Thrusts

An in-depth discussion on the overall policy objective for pastoral development is the first necessary step in order to define an overall vision and to develop policy strategies and identify policy instruments intended to achieve this objective[55].

***Overall vision**: The changing role of pastoral livestock production within pastoral livelihoods and the limited potential of increasing pastoral production make the search for increasing diversification of their sources of income essential and urgent. This calls for the development of a vision for sustainable development of the drylands, which balances the trade-offs between increased demand for food and the provision on environmental services, in an environment of increasing rangeland degradation.*

Recommendation on overall policy thrust
Different ways to support growing populations in the drylands need to be identified and the relative weight that should be given to investments promoting out-migration versus investments in diversification and enhancement of the mobile pastoral production needs to be balanced. This should be best pursued by a targeting mechanism that differentiates between different categories of groups (young, old, rich, poor, family network etc) and the options that are best suitable to support their livelihood.

Policy making always involves the analyses of different interest groups and decision making between the trade-offs in support of the diverse interests. Therefore ensuring participation of all stakeholders in the process of policy making is an important part of policy making. The ideal would be to promote the coexistence of these groups by identifying policy strategies serving the needs of the different interest groups while at the same time contributing to achieve one common goal. Concerning the development of policies for pastoral systems, it is important to realize that there are not only conflicting interest groups interfacing with the pastoral sector, but that there are also diverse interest groups within the pastoral system (e.g., poor and rich pastoralists, young and old pastoralists).

- **Ensuring Participation of all Stakeholders**

In the past marginalization of pastoralists and their lack of political leverage to influence policy processes has too often resulted in misunderstanding, lack of knowledge and disregard of the effectiveness and needs of mobile pastoral systems in arid and semi-arid areas. In order to ensure that all stakeholders are associated with the definition of such a long-term vision, the following direct steps would be required:

- **Broad-based Consultations**

Raising awareness of all policy makers through broad-based workshops on national, sub-regional, and regional levels is required to define the long-term vision and the required steps to implement such vision. Timing, (i.e., letting it dovetail with the preparation of major policy papers, such as the Poverty Reduction Strategy Papers (PRSPs) and donor assistance strategies) and broad-based ownership, (i.e., involving also infrastructure and social service departments) would be essential, because of the cross-cutting nature of the issues.

To defend their interests, pastoral people have started to form international organizations like the World Alliance of Mobile Indigenous People (2002) and the World Herders Council (1997) and initiate global pastoral gatherings like the global pastoral gathering in Turmi/Ethiopia in 2005. Pastoral organizations are increasingly represented at international meetings i.e., the 5th World Park Congress (WPC) in 2003, the World Symposium on Sustainable Development, the EcoAgriculture Conference, the World Conservation Congress, the World Parks Congress and the 7th Session of the Conference of the Parties of UNCCD. The first results of the participation of pastoralist in these meetings are internationally recognized commitments and declarations, such as the Karen Commitment for livestock keeper's rights and the Dana Declaration on mobile people and conservation. The urgent needs for action has led also several development partners to develop action plans for the sustainable use of pastoral areas and improvement of the livelihoods of its users, in particular the African Pastoral Policy Initiative Framework, implemented by AU-IBAR. This ALive Policy Note is fully in line with the AU-IBAR initiative.

- **Strengthening the Representation of Pastoralists**

In the past pastoralists have been less involved in national policy debates, as they often belong to ethnic minorities and/or graze their animals in remote areas. Furthermore, there is often no ministry assigned to the issues of pastoral livelihoods, and the Ministry of Livestock remains as the only concerned ministry. However, ministries of livestock generally

[55] A policy strategy is an elaborated and systematic plan of action, which - as an element of the overall policy - is operating to achieve the policy objective. Policy instruments are the means of the policy and the methods by which a policy strategy is implemented and policy objectives are achieved.

do not have a mandate regarding issues of accessibility of natural resources or availability of social services (education, health care, and infrastructure).

Pastoralist organizations can facilitate the inclusion of herders' concerns and needs in national development strategies, as shown in the example of Kenya (see box 1). Improved pastoral representation can be achieved by the pro-active strengthening of partnerships with existing pastoralist organizations, like the local initiative of the Centre for Minority Rights Development, CEMIRIDE promoting the Kenya Pastoralists' Week and the Uganda Pastoralists' Week promoted[56].

- **Key trade-off decisions**

The key trade-off decisions to be made are likely to include the following:

- **Supporting out-migration versus investment in pastoral areas and options of diversification**

The trend of growing population on decreasing rangelands and reduced technology options to increase the productivity of the pastoral production system creates the need to sustain more people on less land with fewer animals per capita. Sandford[57] points out that the number of livestock needed per pastoral household and thus the human carrying capacity of the drylands depends on the extent to which pastoralists:

- Have diversified their economic activities and consequently receive, wages or profits;
- Receive remittances from family members who did exit the system; and
- Can make use of trade to buy cheaper food in exchange for livestock and their products.

The trade off decision that results from this growing imbalance is the relative weight that should be given to investments promoting out-migration versus investments in diversification and enhancement of the mobile pastoral production. However, instead of weighing the trade-offs between these options, the key question is how coexistence can be achieved while targeting the different groups (e.g., poverty induced alternative income generation vs. conversion of livestock wealth), which both 1) realizes local growth opportunities in processing, trade, etc. which would lead in turn in investments in basic physical and social infrastructure and 2) precludes that alternative income generating activities would lead to reduced mobility and overgrazing in the areas surrounding urban settlements or an increasing exploitation and degradation of non pastoral natural resources in rural areas[58].

- **Provision of cheap food for urban areas versus sustainable development of the marginal, poor, rural areas**

For a long time the provision of cheap food for urban areas has been an important policy objective in many African countries. However, it was realized that policies allowing the import of subsidized meat and the subsidization of crop inputs lower the marketing options of pastoral products and negatively affects the Terms of Trade of pastoral products and thereby decreases the human carrying capacity of the drylands. Furthermore subsidization of crop inputs can cause encroachment of arable farming in marginal pastoral areas, and restrict mobility. These two processes inhibit the sustainable development of marginal poor rural areas, which is leading to increased outmigration to urban areas. This induces a downward spiral as investment potential in the rural areas is not realized and employment options in the rural areas are limited.

Recommendation on trade-offs between different land uses within drylands area
The trade-offs between the investment and support of different systems competing over the natural resources of the drylands have to be analyzed and options of combined use of contested rangelands need to be elaborated, institutionalizing relationships between arable farming and pastoral livestock keeping. In case no options of combined use can be elaborated, ways need to be found to avoid violent conflict and to identify the optimal resource use of contested rangelands; (i.e., protection of emergency grazing reservoirs and livestock corridors from encroachment by farmers).

- **Trade-offs between the support of competing land-use systems within the rangelands and options of combined use**

The competition between mobile pastoralists, agriculture and wildlife over the natural resources of the rangelands often leads to conflict. Planning should not just base decisions on the narrow focus of an immediate yield increase, when an area of land is converted from grazing to crops or set apart for the establishment of national parks, but look at the wider importance that these patchy resources have for the viability

[56] ALive/LEAD 2006 - Fenke Elskamp
[57] ALive/LEAD 2006 - Sandford
[58] ALive/LEAD 2006 - Scoones and Devereux

of the entire pastoral systems, in preventing conflicts and reducing food aid dependency. Above all, it has to be emphasized that while it is necessary to discuss the trade-offs between the different systems it is even more desirable to identify options of combined use.

Box 1: Empowerment and pastoral investment in Kenya: It pays to be represented

In Kenya, the Pastoral Forum (the national association of nomadic livestock keepers) through a pastoralist thematic group, has been actively involved in the formulation of the Initial Poverty Reduction Strategy Paper (IPRSP) and PRSP. Through intensive lobbying, the development of the arid and semi-arid lands became a special theme. As a result, the special needs for pro-poor investment in the pastoral areas was clearly integrated in Kenya's IPRSP and is now translated in support of the second phase of the World Bank-funded Arid Land Natural Resource Management project, including the identification and prioritization of larger roads and infrastructure not covered under the credit.
Source: World Bank, Directions in Development (2005)

Policy options

It is important to distinguish between pastoral systems in the arid and in the semi-arid regions since it is only in the arid regions where opportunistic grazing is the only mode of production which can make sustainable use of the drylands; whereas in the semi-arid areas, other forms of land use have to be considered especially agro-pastoral systems. Furthermore the scale and regularity of movements need to be taken into consideration when aiming to elaborate policies for pastoral people.

Defining the Incentive Policies

Incentive policies that use public funds need to address the negative social and environmental externalities and protect the sector from unfair competition. Regarding protection of mobile pastoral systems, this would imply considering the options for the following incentives:

- **Incentives for Diversification and Exit Options**

The growing imbalance between humans, livestock, and natural environment makes it necessary to identify and support alternative income generating opportunities.

It would include implementing policies which address the negative affects of poverty induced settlement. Herders tend to move closer to the urban centers to get better access to the milk market and to look for alternative income generating opportunities. The provision of subsidized livestock feed through import or aid, while socially and politically often desirable, tends to cause declining mobility and increasing density of livestock in the distribution areas. Therefore priority should be given to development interventions aimed at enhancing pastoral dairying, such that it can co-exist with continued herd mobility by improving road networks or supporting the development of milk collection centers[59].

To support diversification of income of poor herders with unviable herd sizes, alternative income generating activities in the drylands that can be pursued in combination with pastoral livestock keeping and without over-exploitation of the natural resources, should be identified and supported i.e., resources from tourism, handcraft, processing, exploitation of other natural resources such as beekeeping, etc.

New income generating opportunities would also imply setting incentives for wealthy herders to invest in local growth opportunities in processing, trade, and in supporting new forms of commercial production in the rural areas[60].

Provision of training and credit for investment in small and medium enterprises would support these options.

Finally, in most areas, it would include incentives for facilitating the process of exiting from the pastoral systems (e.g., vocational training, micro-credit).

- **Incentives for Payment for Environmental Services**

The provision of incentive-based mechanisms in the form of flexible and direct compensation mechanisms to environmental service providers can be used to facilitate the shift to improved land use options which are favourable to the environment[61]. In the drylands herders, producers and landowners can be paid for specific environmental services such as regulation of water flows, soil conservation, conservation of natural landscape and wildlife habitats, or carbon sequestration[62].

Sharing of environmental benefits from sustainable range management (i.e., eco-tourism) would be one of the options to finance the payment for environmental services. This would include trading-off investments in conservation of national parks, which restrict livestock movements. Win-win solutions seem to be possible here, for example, in East and Central Africa, where pastoral groups have reacted positively to community planning of wildlife livestock grazing areas and payment for wildlife conservation.

Defining Policies Regulating Natural Resource Use

- **Development of Appropriate Land Use Legislation**

The development of appropriate legislation which ensures access and user rights to critical grazing and water resources, to limit encroachment (e.g., cropping, ranching), integrates various natural resources uses, and in some areas, reverts lost key grazing and water resources back to pastoral use is essential for the environmentally and socially sustainable development of the pastoral sector

In recognition of the need to safeguard pastoral land against expropriation while at the same time allowing flexible

[59] ALive/LEAD 2006 - Nancy Abeiderrahmane

[60] ALive/LEAD 2006: Scoones and Devereux
[61] LEAD, 2006
[62] LEAD, 2006

responses for transhumance mobility, the old mainstream common-property and open-access models have been replaced by the concept of fuzzy access rights. Fuzzy access rights offer a framework to regulate overlapping claims to patchy resources, shifting assertions of rights and continuous contestation and negotiation of access rules.[63] The law 61-05 in Niger is a pioneer in the legislation of this concept[64].

***Recommendation: Establish or support legislation to*:**

- *Facilitate mobility of pastoral herds as the optimal strategy to make sustainable use of the arid zones in the dry-lands;*
- *Facilitate trans-boundary herd movements and establishing regulations for trans-boundary movements, such as the ECOWAS certificate of transhumance. These regulations need to reduce disease risks and distinguish between those movements for trade and those for grazing;*
- *Promote the protection of key grazing areas within the arid zones, which have a high potential for agriculture but are crucial for the pastoral systems since they serve as drought grazing reserves, and the protection of access to water through the establishment of corridors; and*
- *Promote the co-habitation of competing interest groups in the arid and semi-arid zones of the drylands, with regulations of collaborative management. A flexible approach to pasture access for different uses and groups with rights according to prevailing conditions has to be promoted.*

- **Institutionalizing Cooperation between Different User Groups**

Regarding the observed process of homogenization of production systems, several authors argue that crop livestock integration may not be the best solution and recommend emphasizing the complementarity of crop production and animal production[65].

This would require community institutions facilitating and enforcing contracts between the different land users. Various forms of institutionalized relationships between farmers and pastoralists have been documented (see box 2). Concerning the protection of land to preserve flora and fauna the pivotal point is to elaborate ways which integrate pastoral people in the management of the protected zones and to learn from past experiences, for example, with the IUCN model of Protected Landscapes Category V.

Box 2: Institutionalized Relationships between Farmers and Pastoralists

In different regions in Senegal local institutions are documented which constitute a symbiosis and cooperation between pastoralism and agriculture. An important element of these forms of cooperation is the respect of simple rules like the order that every pastoral family should be affiliated to a local sedentary farmer's family. The herd of the pastoral family has to stay over night on the fields of the farmer and fertilize them; the farmer in turn has to be answerable for the herd's movement during the day. These local practices have been replicated in the Sine Saloum region, supported by the GTZ programme PAGERNA (Projet Auto-promotion et gestion des ressources naturelles au Sine Saloum[66]). Similar examples of institutionalized cooperation between sedentary farmers and transhumant pastoralists have been observed in the Laghouat region in Algeria[67] and in the Savannah Belt in Sudan[68].

- **Regional and Transboundary Natural Resource Use Management**

Regional and trans-boundary natural resource management is necessary for the sustainable development of many regions in Sub-Saharan Africa and trans-boundary herd movements have to be facilitated. For example, in West Africa, it is necessary to regulate access to the more stable grasslands from the southern countries of Benin, Togo and Ghana for pastoralists in Mali, Niger, and Burkina. This could be achieved by a revision and adaptation of the agreements

[63] The distinguishing characteristics of fuzzy access rights include: multiple rights, partial and asymmetric rights, flexible boundaries, time-bound access rights and mutual trust and reciprocity (Aredo, 2004). Hierarchies of rights are very common to regulate multiple rights and duties. In particular, it is possible to distinguish between: a) primary users having highest priority within the territory; b) secondary users having seasonal access to resources; and c) "tertiary users" having infrequent access to resources dictated by difficulties (Cousins, 2000).

[64] Alive/LEAD 2006 - Harouna Abarchi

[65] Delgado, 1979; Slingerland, 2000; Scoones, 1994

[66] ALive/LEAD 2006 - Nathalie Beaulieu

[67] ALive/LEAD 2006 - Azeddine Mouhous

[68] ALive/LEAD 2006 - Mey Eltayeb Ahmed

on transhumance of the National and Economic Community of West African States (ECOWAS)[69]. These regulations need also to address the need to reduce disease risks and to distinguish between movements for trade and movements for grazing.

- **Livestock marketing and disease management policies**

If livestock marketing and disease management policies and infrastructure, such as cordon fences are extended into areas of communal rangeland where pastoral transhumance is still occurring, careful thought needs to be given to the complex objectives of these pastoralists and their patterns of natural resource use[70].

- **Defining Investments Needs**

The primary investments to maintain mobile pastoral production concern infrastructure services and research as summarized below.

- **Infrastructure**

Investment needs in Infrastructure concern mostly water, networks of pathways (corridors) through crop areas, markets, milk collection centres, mobile slaughterhouses mobile communication, and weather forecasting equipment to manage drought. The introduction of modern communication technology can be really useful in order to inform pastoral people about the state of rangelands and markets. Sustainability of these investments is a major issue, and needs to be addressed through clear agreements with pastoral users on cost sharing and maintenance responsibilities. For example, charges for water infrastructure such as wells, boreholes, etc. would improve their sustainability and hence ensure a better spatial distribution of livestock over the arid rangelands. Experience has shown that pastoralists would be willing to pay for such services.

- **Services**

Technical services, such as veterinary care, and livestock marketing information and financial services, such as banking institutions, and social services, such as health care and education need to be addressed. Investments include the provision of equipment and training to replace the current static service models for human and animal health and education with community based mobile service models. The issue is not only a determination of the investment needs to support the mobile pastoral production system, but also on how to make them cost efficient, i.e., in the case of veterinary services, provision of services by community animal health workers (CAHW) and para-veterinarians has proven to be more cost efficient. Major strategic decisions are required in education on the curriculum (focus on pastoral indigenous knowledge, versus more formal teaching, language) and "training the trainer" programmes[71].

As regards health, one option would be the combination of basic human and animal health care, which has been rarely implemented although it offers many synergies, albeit with high transaction costs. It has been tested that by combining health and veterinary vaccinations, 15 percent of operational costs of interventions can be reduced[72].

Recommendation: Provide incentives to sustain and diversify pastoral systems by:

- *Supporting the continued mobility of pastoral herds by providing appropriate services. This may include, according to local conditions: the provision of mobile animal health services (see ALive policy note on animal health service delivery); the support of the development of milk collection centres and mobile slaughterhouses; the introduction of modern communication technology in order to inform pastoral people about the state of rangelands and markets; the development of adapted education and training programs and the introduction of financial services.*
- *Investigating options to support the role of pastoral livelihoods as custodians of the drylands by policy options such as payment for environmental services.*

- **Research**

As there are many gaps in the knowledge of country specific mobile pastoralism as regards many issues highlighted in this paper, research activities need to be supported in close collaboration with pastoralists. Meanwhile, adequate indicators to monitor the situation of mobile pastoralism within the national and regional context must be defined in order to adapt measurements accordingly.

Research should include an extensive literature review and assessment of lessons learnt, for example, water use fees, grazing fees, livestock corridors, integrated livestock-wildlife

[69] Alive/LEAD 2006 - Bassirou Bonfoh
[70] ALive/LEAD 2006 - Daniel McGahey
[71] Kratli, 2001
[72] ALive/LEAD 2006 - Bassirou Bonfoh

management, integrated livestock-forest management, grazing reserves. It should also evaluate activities mentioned above while attempting to produce new "out of the box" incentives to be tested.

Recommendation on diversification beyond pastoral production: *To respond to the impossibility of sustaining yet more people on less land with fewer animals, there is a need for a well targeted approach, supporting: :*

- *Investment of rich herders in local growth opportunities (e.g., livestock products processing);*
- *Diversification of income of poor herders with unviable herd sizes by identifying and supporting alternative income generating activities in the dry-lands that can be pursued in combination with pastoral livestock keeping and without over-exploitation of the natural resources (i.e., resources from tourism, handicraft, processing, exploitation of other natural resources such as beekeeping, etc);*
- *Provision of training and credit for investment in small and medium enterprises; and*
- *Facilitating the process of exiting from the pastoral systems (e.g,. vocational training).*

Annex 1 Problem tree pastoral mobility