

Pastoralism and Conservation in the Sudan

Executive Summary

Introduction

On a global scale, Sudan perhaps ranks first in terms of pastoralists population size. About 66 per cent of Sudan is arid land, which is mainly pastoralists' habitat. Pastoralism in the Sudan involves about 20 per cent of the population and accounts for almost 40 per cent of livestock wealth [Markakis, 1998: 41]. The livestock sector plays an important role in the economy of the Sudan, accounting for about 20 percent of the GDP, meeting the domestic demand for meat and about 70 percent of national milk requirements and contributing about 20 percent of the Sudan's foreign exchange earnings. It is also a very significant source of employment for about 80 percent of the rural workforce.

In the Sudan it is estimated that the total number of cattle multiplied 21 times between 1917 and 1977, camels 16 times, sheep 12 times and goats 8 times [Fouad Ibrahim, 1984, p.125 in Markakis, 1998: 42]. Their numbers are estimated to have doubled between 1965 and 1986. The rapid rate of animal population increase has been attributed to the introduction of veterinary services and the stimulation of the market. Two periods of exceptional rainfall (1919-1934 and 1950-1965) added momentum to this trend. In the early 1980s there were nearly three million heads of camels, over 20 million cattle, nearly 19 million sheep, and 14 million goats. Livestock estimates for the year 2005 are 38 million heads of cattle, 47 million sheep, 40 million goats and three million camels [Ministry of Animal Resources, 2006].

The Ecological Context

Pastoral communities are almost entirely concentrated in ecologically marginal and semi-arid areas under communal land tenure systems. These areas also contain zones of large-scale irrigated and rainfed agriculture, small-scale farming, and protected wildlife areas and forest reserves. These tend to be supported by both the government and international donors and reflect land legislation and development interventions that favours non-pastoral activities.

In the Sudan, rainfall is the main factor influencing the distribution of human and livestock populations. The annual rainfall ranges between from 75mm in the extreme north to 1500mm in the extreme south. Accordingly, five ecological zones with variable grazing potentials can be identified:

muddy conditions, and to avoid large-scale rain-fed and irrigated farming where livestock admission is prohibited.

Sudan is characterized by a high diversity of habitats resulting from interactions of soil types, climate, topography, vegetation cover, land use system, water resources and the prevalent human and animal population activities. The habitat diversity has created eight ecological zones: desert, semi-desert, lo

Savannah				goats during the dry season
Wetlands	Swamp and floodplain in southern Sudan		Aquatic plants and bamboos	Cattle in the dry season
Highlands	Western, East and South		Mountainous vegetation	Goats, sheep, cattle and camels

Climatic-Vegetation Zones in the Arid and Semiarid Sudan

Type	Precipitation in mm	Arid Months	Dominant Vegetation	Dominant Land Use
1. Hyper-arid to arid Saharan marginal zone	50-200	11	Sparse thorn-scrub grasslands in favourable areas. <i>Acacia tortilis</i> , <i>Acacia mellifera</i> .	Nomadic and semi-nomadic pastoralism with limited millet cultivation.
2. Arid northern Sahel	200-400	10	Thorn-scrub savannah with a dominance of <i>Acacia tortilis</i> , <i>Acacia mellifera</i> , <i>Acacia nubica</i> , <i>Balanites aegyptiaca</i> , <i>Commifora africana</i> , <i>Acacia Senegal</i> .	Herding combined with millet cultivation and gum arabic collection.
3. Semi-arid southern Sahel	400-600	9	Degraded low rainfall woodland savannah with a dominance of <i>Acacia Senegal</i> , <i>Adansonia digitata</i> , <i>Hayphaene thebaica</i> , <i>Balanites aegyptiaca</i> , <i>Acacia seyal</i> , <i>Guiera senegalensis</i> ,	

b. *Western Sudan:* Kababish, Kawahla, Hawawir, Shenabla, Beni Gerrar, Hamar and Maganin in North Kordofan state; and Meidob, Zeyadiya, Jellul, Mahmeed, Mahriya and Zaghawa in North Darfur state.

In western Sudan, camels have three migrations: rainy season, winter and summer. Summer grazing areas include El Khuwie, El-Rahad, En-Nahud, Nyala, El Diein, Wadi Hawar and Wadi El Melik. During the rainy season they congregate in Hamrat El Sheikh, Um Seyala, Um Enderaba, El Mezroub, Um Badir, El Malha, Kutum and Meleet. Camels in Eastern Sudan cover a much shorter migration between the rivers Atbara, Rahad and Dinder, and up and down the Red Sea hills.

During the last three decades of the 20th century frequent droughts had resulted in the decline of pasture in the traditional homelands of camel pastoralists. Nowadays the camel-herding groups of north Kordofan move south very much earlier early and far deeper into the Nuba Mountains and beyond, in search of water and pasture. This often results in conflict with rival pastoral groups. This is also the case with the Zaghawa camel herders of north Darfur who moves south as far as Bahar El Arab.

The Beja of eastern Sudan move as little as possible (from the Red Sea hills to the coastal plain in summer)

other pastoral and agro-pastoral groups in the north (Masaleet, Fur, Zaghawa, Hamar, Kababish, Kawahla, Shenabla, etc.) and with the Nilotic pastoralists (Dinka, Nuer, etc.) in the south. In the Baggara belt, the annual rainfall increases from 400 mm in the north to over 800 mm in the south and is confined to a relatively short season, which extends from June to October. The actual start of the rainy season is unpredictable and varies from one year to another.

The disruption of commerce and services, insecurity which lead to large-scale displacement, the contraction of subsistence activities and exchange networks, were all war-related factors which contributed to the decline of the pastoral economy. Most pastoralists had suffered livestock losses through raiding and disease, and very few families had been able to accumulate sufficient food reserves to see them through any period of natural calamity. The floods of 1988, which affected large parts of Upper Nile and Bahar El Ghazal regions thus had a devastating effect, and resulted in serious food shortages and local famines. The well-publicized famine of northern Bahar El Ghazal in 1988, however, was entirely a result of the

Until its dismantling in 1971, the system of Native Administration constituted the most effective mechanism to regulate and control the activities of the pastoral groups. It not only provided the instruments for the maintenance of law and order, but also defined and enforced the rights of each group over the resources, and regulated the direction and timing of pastoral movements. As the abolition of the Native Administration was not accompanied by the introduction of an alternative system to undertake these functions, the result was a

stock depleted by droughts and famines. But that positive impact didn't last long, as labour in town become alternative for those who lost large of proportion their herds. The tendency of young Beja to work in urban centres created shortages of labour and caused the groups to introduce significant changes in their movement patterns. This in turn constrained the traditional survival and recovery mechanism that are essential for the maintenance and strengthening of Beja pastoralism. These changes have made it difficult to keep large herds thus people shifted to more localized market-oriented systems of production focusing on small stock.

Pastoralism and Environmental Degradation

Pastoralists in the Sudan, as elsewhere, are usually accused of being responsible for the misuse of natural resources. Overgrazing is accordingly pointed out as among the primary causes of environmental deterioration. However, research findings have already shown that such interpretations have no empirical foundations. The issue here is not to deny the incidence of overgrazing. It is rather to draw attention to the fact that overgrazing more often than not is a symptom rather than a cause of resource mismanagement inherent in official land use policies and planning. In other words, overgrazing is a consequence of the squeeze

rewarding career to pursue, nor roots in another region to fallback on in the manner big 'farmers' do.

Though pastoral nomadism constitutes a form

environment. However, it is not yet too late as the integration of livestock into large-scale mechanized farming is already, albeit spontaneously, taking place. What is required is a concerted effort to include the production of, for example, legumes in the rotation system and improving the already going on utilization of

The transfer of property rights over pastoral resources to the state—ostensibly to reduce conflicts over such resources—often results in even more ambiguity and insecurity. For

Conversely, increases in population pressure in the conditions of western Sudan, if not reduced by high out-migration rates, may result in an expansion of cultivation onto marginal lands, thereby raising the opportunity costs of grazing land. By increasing cultivation at the extensive margin, farmers encountered increased competition with nomads. This induces a phenomenon known as 'preventive' clearing. When nomads are absent, farmers preventively clear land in order to secure property rights, given that both nomads and farmers will normally respect the security of usufruct-property rights. Such encroachment by farmers is often backed by formal legislation. The ruling that fields left fallow for more than three years were considered 'free' has created tenure insecurity and farmers to reduce fallow periods and embark upon strategies of preventive clearing. We may think of this as farmers 'gathering' fields for possible future use. Accelerated environmental degradation and an intensification of conflicts between nomads and farmers were the results.

Above the farm level, however, the wider regional environment offers several opportunities for crop-livestock integration—but integration based on economic exchange. Various traditional types attest to the benefits of such exchange opportunities. The widespread phenomenon of farmers entrusting their cattle to nomads under a variant of the crop-sharing contract is a good example of an economic exchange based on the comparative advantages of the two production systems. The nomads herd the farmers' cattle in exchange for a share of the outputs, usually specified in terms of calves and/or milk. Nomads profit from the increased access to capital, while farmers profit from a diversification of their assets across ecological zones. Such investment opportunities are also highly valued by urban investors. Another type of practice is known as *talaq*, under which farmers allow nomads to graze their livestock on the crop stubbles left after the harvest when the animals can no longer damage the crops, in exchange for the benefits of animal manure. Outside the growing season, both farmers and nomads benefit from the establishment of a set contractual arrangements and customary practices.

In conclusion, equity, efficiency, and environmental sustainability strongly suggest that much can be gained from the restoration of non-exclusive property rights to pastoralists, and from the reestablishment of property regimes that allow for the exploitation of the comparative advantage of different production techniques in a regional context. This can only be achieved by avoiding policies that call for the territorialisation of pastoralists together with the adoption of policies that foster the integration of pastoralism and farming. How to achieve this in practice requires in-depth social science as well as technical research.

Conclusion

When Sudan is considered as a whole, the general pastoral situation is not encouraging. Development in the rangelands give cause for concern not only because of the sequence of droughts, but also because of the deterioration of the conditions in the rangelands caused by changing patterns of land use and the unrestricted and almost universal access to land formerly retained by different groups of pastoralists for their own exclusive use. Environmental degradation caused by the removal of plant cover seems more rapid and more serious in the central clay plain than elsewhere in the pastoral habitats. There have been dramatic changes in land use patterns in Kassala, Gedaref, Blue Nile, Sennar, White Nile and South Kordofan states where large tracts of natural rangelands have been cleared, and the linkages between herding and farming clearly contribute to declining productive capacity as a result of over-utilization.

The typical approach to development in such degraded areas is still to treat symptoms, often over-emphasizing the easily visible, but superficial phenomena at the expense of their root causes. There has been a tendency to assume that the immediate human cause of any

of the pastoral households. Whereas livestock development depends heavily on imported technology, knowledge and infrastructure, the pastoralists' culture is grounded on local knowledge with very little use of external inputs. The contradictions between these two opposing cultures of livestock production are compounded by an interest gap between the pastoralists and the planners. The planners are educated and trained to appreciate modern techniques of production with little or no interest at all in the pastoral culture of production. These contradictions also relate to the planners' perception of the methods capable of developing the livestock industry, which are at times incompatible with, if not detrimental to, the pastoralists social organization of production and aspirations.

Moreover, there is the observed tendency among planners and administrators to simplistically believe that an increase in livestock production and productivity is synonymous with pastoral development. Thus, for them, the prime objective of integrating the pastoralists in thatii

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wildlife by-products and its profits find a place into the Shilluk society, then a lot of the Shilluk tribesmen will be engaged in hunting for trade...Consequently, trade in wildlife by-products... will lead to the degradation of conservation values in society. Therefore, the Shilluk's measures of conservation can be seen not only as a measure of wildlife protection, but also as a measure of combating...poaching and trade in wildlife by-products.

Source: Elmahi, 1994

Box 2: Baggara Selective Hunting

The Baggara tribes in western Sudan have a long tradition of hunting. Their hunting methods evolved in response to the environmental conditions of their region. It is a hunting technique suitable for long distances in an open savannah terrain. Again, the horse and the long spear have very much facilitated a hunting method...With such tools of hunting; the Baggara exploited the savannah big herbivores to secure their needs for the rainy season. The Baggara horsemen are

are also responsible for outbreaks of anthrax and rinderpest that decimated antelopes and buffalo. Thus, it will not come as a surprise that wildlife populations have dropped steadily during recent decades. In addition, relations between the national park authorities and local communities and pastoralists have degraded considerably, often out of pure frustration, from both sides, with the uncontrollable changes in land use.

It is against the background of this continuing deterioration of the conditions in and around the Dinder national park, that an UNDP-GEF project “Conservation and Management of Habitats and