



# THE FOREST-LIVESTOCK INTERFACE



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## CONTEXT

About 40 million people in the world, almost half of them African pastoralists, depend almost entirely on livestock for their livelihoods. Animal husbandry on rangelands produces about 23 % of the world cattle meat, with 13 % of this production originating from Africa. Sub-Saharan Africa (SSA) has 40 % of the world's rangelands and shelters 55 % of the cattle in arid and semi-arid areas livestock systems.

Livestock production contributes to nutritional and food security and to poverty reduction on the entire continent, i.e. not only in arid and semi-arid rangelands but also in the extensive mixed farming systems of the sub-humid zones. At household level, livestock contributes directly to nutrition (meat and milk) and incomes (sale of milk, meat, manure, animal draught power, and live animals), and indirectly to food security (use of income generated to purchase grain or fertiliser, use of draught power on farms, and use of manure to fertilise crop fields) as well as to general well being (income used on health, education, etc.). In fact, a large proportion of crop producers use livestock as a living bank account, where they draw in response to unexpected situations requiring cash money. Livestock also plays important cultural functions, particularly for important traditional (dowry) and religious events and ceremonies. Livestock is a source of prestige for traditional chiefs and merchants. Finally, livestock helps to reduce the workload on humans (draught power), to control weeds (particularly in tree plantations), to give value to marginal lands and protected forests, and to turn crop residues and other waste products into valuable food.

At the national level, livestock is also very important in many countries, not least in the Sahel region. For example, livestock and poultry production represent 17, 20, 18 and 15 % of the gross domestic product (GDP) of Mali, Mauritania, Niger and Burkina Faso. These figures are quite likely underestimations since many livestock products, like skin and hide, are accounted for in other sectors, and several by-products, like manure and animal draught, are unaccounted for.

Mobile livestock production systems are exposed to various risks - low access to land ownership, problematic access to natural resources, vulnerability to climatic disasters and high frequency of conflicts - but, in compensation, they offer some relative flexibility. For example, there is normally the possibility to easily and quickly cash back the capital invested in cattle in case of need, and the advantage of being able to move from one area to others in response to climatic or social constraints. In addition, in many areas of the world, pastoralism is the only option available to turn natural resources into food and income.

Livestock production obviously depends on a variety of plant resources, including ligneous vegetation. In rangelands where livestock is openly grazed there is a dynamic relationship between the livestock and

the natural vegetation, the result of which depends on the composition and density of the vegetation and the number and species of livestock, climatic features, as well as the management style of the herder. While some livestock pressure is beneficial to most plants, exaggerated pressure on the natural vegetation will invariably lead to environmental degradation.

There is a natural complementarity between the semi-arid and the more humid areas in SSA, particularly obvious in the West African transition from the Sahelian via the Sudan to the Guinea zones. Natural ecological conditions favour livestock production in the drier regions, and crop production in the sub-humid regions. Forests and woodlands provide critical dry season grazing for livestock. The interactions between livestock and forests give rise to many problems and potentials that have not always received sufficient scrutiny in SSA.

Realising the potential of livestock in the socio-economic development of many SSA countries and the role forests and woodlands play in this industry, the project on *Lessons Learnt on Sustainable Forest Management in Africa* commissioned a study on the topic. The study aimed at identifying lessons learnt that can guide countries and their forest and livestock resources stakeholders how to avoid negative and maximise positive interactions between livestock and forests. The focus of the study was on the West African transition from the Sahel to the forest zones.

The report by Aimé Nianogo and Ibrahim Thomas is available on AFORNET's website: [www.afor-net.org](http://www.afor-net.org)

## SOME KEY ISSUES AND LESSONS LEARNT

### Sustainability of pastoralist practices

Studies have shown that under the right circumstances nomadic or mobile pastoralism appears to be not only ecologically sustainable but also relatively productive as an opportunistic way of natural resource exploitation. This is particularly true for several fragile ecosystems in the Sahel region of Africa. For example, a study conducted in the Sahelian countries of Burkina Faso, Chad, Mali, Niger, Senegal, and Sudan indicates that contrary to popular belief, livestock productivity per unit area and per head has increased, with 93 % and 47 %, respectively, at the same time as livestock numbers have increased during the past three decades in the Sahel.

However, it appears that competition from crop production, herd dispossession, wars, droughts and population growth have undermined traditional pastoral institutions and contributed to mass displacement of pastoralists. The situation is further complicated by the fact that livestock migration routes have either been cut off by other land uses or have totally disappeared. In some cases, borders between neighbouring countries have been closed due to long

periods of conflicts. As a result, pure pastoralism, as a way of life and a production system, appears to be fighting a losing battle.

Many governments promote sedentary livestock systems and intensification of production to meet the ever increasing demand for livestock products. There is, however, little hope that this will bridge the supply and demand gap in the near future and traditional livestock systems will continue to be the main sources of meat and milk. Furthermore, it is not clear that intensification will eventually reduce livestock pressure on the environment, since, in all likelihood, investments in such production systems will only affect a small percentage of producers, while the vast majority of livestock owners will continue to be involved with traditional systems for a foreseeable future. Improvements and deterioration of these systems will therefore have a much larger impact on the environment and natural resources, in spite of the obvious advantages of “zero-grazing” and other forms of intensification when it comes to reducing erosion, improving milk production and growth of cattle.

As a combined result of loss of rangeland and migration routes, and increased pressure on the resource base because of increased demand for meat and dairy products, the trend observed in many countries is that grazing lands can not maintain their original ecological productivity. This also raises the question as to whether the current pastoralist practices would be sustainable.

### Potential for land degradation and loss of biodiversity

Ruminants consume certain leaves, buds and fruits directly on growing trees and shrubs, but also leaves, flowers and fruits found on the ground. It is belie-

ved that where livestock numbers are not excessive, ruminants may contribute positively to plant growth and reproduction. By dispersing pollen and seeds, livestock may help improve soil cover; browsing helps regulate shrub growth while grazing removes herbaceous biomass which may otherwise provide fuel for bush fires. Additionally, walking by animals breaks soil crusts. Many of these factors stimulate grass growth and seed germination, thus contributing to land and vegetation improvements.

It is, however, noted that intensive browsing will only affect young plants and reachable parts of the canopy of older individuals. Additionally, certain plants are able to protect themselves by growing an impenetrable canopy.

Heavy grazing decreases soil organic matter content and causes soil compaction, which reduces water infiltration and storage and contributes to erosion. Continuous and intensive removal of leaves and buds depletes plant reserves, reducing the plant's ability to compete with other species for light, water and soil nutrients. Long term intensive browsing will eventually affect the composition of a given plant community in the ecosystem, favouring some species and suppressing others, thereby potentially also affecting those herbivores that are linked to particular plants and communities. Intensely browsed areas have a pastoral value 1.5 times lower than other areas. The mobility of herbivores, particularly ruminants, is a key factor that may help regulate animal pressure on individual plants or in specific areas.

### Access rights and competition for and conflicts due to declining resources

Since pastoral livestock production is generally not recognised as the best way to exploit land resources,



*Heavy grazing in fragile environments prevents regeneration of woody plants and causes erosion (see also cover picture).*

it is also not considered an acceptable justification for acquiring land property rights in most traditional land tenure systems. Some countries have tried to address the issue either by adopting more equitable tenure systems, or by designating certain areas specifically for pastoral activities. However, few countries have been able to actually enforce such new laws. For example, pastoral areas in Burkina Faso are frequently encroached upon by crop producers who claim they are recovering “lost” land.

Therefore, in many livestock rearing countries and regions, conflicts continue over access to declining grazing areas and water resources. This is compounded by inadequate management of grazing lands including insufficient domestication and cultivation of tree crops for fodder. As a result, natural forest and woodland resources are being overused and degraded due to increased human population and livestock numbers.

In many SSA countries, land has been nationalised by governments following independence, thereby weakening the traditional landowners and local institutions that are important for conflict resolution. Disruption of traditional rules and mechanisms, including tenure arrangements, has often resulted from failures in government policies. Traditional communal land tenure systems are breaking down in some countries as a result of significant increases in human population. The other major cause of conflict is related to the mobility of livestock arising from herders driving their livestock through various territories and to pastures that are under the control of other groups. Quite often this results in conflicts with landowners or land managers at national and sub-regional levels. Resolving livestock conflicts requires action at local, national and sub-regional levels.

### **The nexus between pastoralism and forestry**

There is inadequate information and understanding of many aspects of the interaction between natural vegetation and livestock/wildlife. This includes how regeneration of many plant species is affected by stocking levels. As a result, the contribution of forests and woody vegetation to the livestock industry has not been sufficiently quantified and appreciated. The same goes for the reverse, i.e. the impact of livestock and wildlife on forest resources, which also has not been adequately studied.

Neither the forestry nor the agriculture/livestock sectors in many SSA countries have invested sufficiently to understand this nexus. The relationship between pastoralism and forestry therefore continues to be antagonistic as demonstrated by recurrent conflicts over access to fodder resources and the continued actions of livestock herders of lopping trees to provide browse and setting fire to woodlands and dry forests to encourage new flushes of palatable grasses. Scanty efforts are directed at exploiting the syner-

gies that, after all, also exist between the two sectors. Therefore, national livestock policies rarely integrate forestry and wildlife considerations, and they give little attention to the potential advantages of management of fodder species found in forests and woodlands, including their domestication and cultivation.

### **Neglect of local and community institutions**

Traditional institutions and experiences of local communities in the management of grazing lands are rarely considered in by central decision-makers when creating policies and laws concerning resources that support livelihoods of local communities. This is despite the fact that traditional livestock systems resides with local communities.

### **Insufficient coordination in the management of trans-border ecosystems**

Livestock and wildlife often move across boundaries and this requires national governments to monitor and regulate such movements. There is progress on this; for example, in recognition of the importance of transhumance for member states of the Economic Community of West African States (ECOWAS), the Conference of Heads of State and Government of ECOWAS adopted, in 1998, a decision to regulate cattle movement by authorising the crossing of terrestrial borders for the purpose of transhumance among all member countries and for the livestock, specifically cattle, sheep, camels and donkeys. Herders must hold a valid ECOWAS International Transhumance Certificate and accept official laws in the countries they cross into.

However, in spite of efforts by governments in trans-border agreements, there is a serious lack of political will for their implementation.

## **THE WAY FORWARD**

### **The livestock-forest nexus need to be addressed by both sectors**

The forestry sector should be more conversant with and incorporate issues of fodder production and animal management as they relate to forests and trees. Also the livestock sector should understand better the value and production characteristics of various sources of fodder for its livestock and how they can be better managed and sustained. For this to become realities there is a big need for multidisciplinary research that can lead to the development of win-win strategies and plans. There is also an urgent need to create cross-sectoral mechanisms at all relevant levels – policy making, extension, education, research and law implementation - that can facilitate the incorporation of pastoralists and other livestock stakeholders as partners in management of forest and tree resources, and vice versa, i.e. involving forestry stakeholders in livestock issues.



*Many trees, particularly leguminous species, can yield important supplementary feed to domestic animals and is already a significant fodder for stall-fed and enclosed cattle and small ruminants in East Africa. (Photo: ICRAF)*

### **Increase investments in domestication and cultivation of fodder species**

Research is needed on many issues including identification of appropriate fodder species and adoption of fodder production technologies, rangeland management, and participatory natural resources management schemes that involve all relevant stakeholders. Furthermore, there is need to make better use of relevant studies done by many institutions, including The World Agroforestry Centre (ICRAF) and the International Livestock Research Institute (ILRI), on, for example, nutritional value and palatability of these species, improved fodder productivity through better management, use of better and/or genetically improved seed sources, etc.

### **Livestock policies to fully integrate forestry and wildlife**

Livestock policies should, among other things, focus on reducing livestock herd size by promoting quality. This can be a difficult task in view of the fact that many traditional pastoral societies in SSA put a value also on numbers of domestic animals, not only their quality. In addition, it will be essential to fully integrate wildlife and forest issues that will influence the sustained availability of fodder, safeguard the environment, and increase returns from livestock. The potential of the pastoral livestock sector to have a positive influence on the reduction of poverty, requires that management plans not only fully integrate aspects of forests, wildlife and ecosystem dynamics, but also that they are of a long-term nature.

### **Increased use of local knowledge and community institutions**

The current emphasis on decentralisation of government functions should place greater emphasis on empowering local communities in ways that the emerging governance systems recognise the role of community institutions in the development, implementation and monitoring of management plans and agreements. Further, the development and harmonisation of codes of conduct and/or by-laws should take into account

relevant traditional knowledge and values for greater effectiveness. These efforts will in turn improve local communities' power to regulate the access to forest/pastoral resources.

### **Strengthen coordination in the management of trans-border ecosystems**

There is a strong need to support research and development in trans-boundary activities in forests, livestock and wildlife resources, at both national and regional levels. Further, there is need to develop, implement and monitor regional agreements on the use of trans-border natural resources by nomadic pastoral communities to reduce illegal use and ecological degradation, and conflicts caused by these. Increased cooperation between international institutions and governments on monitoring the outbreak of trans-boundary diseases and pests is another area that needs strengthening and developing where absent. Finally, there is a need to set up effective mechanisms for conflict resolution in trans-boundary activities.

The project, "SFM in Africa" for short, has been jointly managed by the African Forest Research Network (AFORNET) at the African Academy of Sciences (AAS), the Royal Swedish Academy of Agriculture and Forestry (KSLA) and the Forest Department of the United Nations Food and Agriculture Organisation (FAO).

The policy briefs are based on commissioned reports which are available in full at the web site [www.afor.net.org](http://www.afor.net.org). The reports contain all relevant references to information sources used.

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