

## LIVESTOCK AND RANGELAND MANAGEMENT

1. The West African Development Bank in its policy of promoting the economic growth of countries supports development projects of livestock or components of a project to improve pasture conditions and productivity, health and performance of livestock (cattle, sheep, goats, camels and pigs) for the production of milk, meat, leather and fiber to ensure the well-being of farmers. Pastoral and agropastoral systems account for over 80% of the supply of animal products in the Sahel and West Africa. The share of livestock in the gross domestic product (GDP) is dominant in several countries where it contributes to 70% of total agricultural GDP, or very high, as in Mali
2. Main factor livestock, grazing land as well as the woodland meadows (and in some cases , areas cleared of dense closed forests), shrublands and desert areas that contain domestic ruminants and wild herbivores . Support efforts to address both the large commercial farms as farms Mixed farming or traditional pastoral systems. Whether large farms or small-scale production systems can vary in intensity, ranging from intensive management systems that feed animals in pens from natural crops or forage crops, more extensive systems that rely exclusively on natural pasture vegetation . Thus, the improvement of the livestock sector and the maintenance of pastoralism in West Africa therefore require a set of technical measures to reduce the environmental and social impacts.
3. This document focuses primarily on livestock operations of small and medium size systems that perform under intensive management (free grazing) and addresses only briefly the large commercial systems or

feeding in stables (whose environmental impacts are lower compared to the management of rangelands) .

4. Projects that the objectives would be to allocate these pastures for other purposes are also possible: protection of fauna and flora, water catchments, tourism, areas of recreation, hunting, mining and petroleum exploration are examples.

### **Potential impacts on environment**

5. The livestock grazing is a widespread practice in the WAEMU zone. The extensive livestock production, especially where pastoralism is practiced mainly in the arid and semi-arid areas where rainfall is scarce and precarious in time and space, is less risky than farming.
6. In addition, grazing activities help maintain the level of soil fertility and physical characteristics through animal dung deposits. Furthermore, the germination of some seeds is possible or stimulated when they pass through the digestive system of animals. For all these reasons, livestock production is proving to be a system of management of marginal lands for optimizing food production with minimal inputs while maintaining the productivity of the ecosystem.
7. However, grazing leads to the growth of large woody plants and herbs indigestible and reduces the production possibilities of the region. Overgrazing and some grazing management practices have serious consequences on the environment. Development activities (such as agriculture, exploitation of water resources and mining, among others)



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that encroach on grazing areas, eliminate grazing practices and degrade resources, represent negative external impacts on grazing land.

8. When the occupation of land by animals, number and species exceeds their capacity, there is significant overuse of forage resources (in the form of excessive logging) leading to degradation of vegetation, loss of beneficial forage species and the spread of bad indigestible grasses, increased soil erosion (indirectly caused by the depletion of the vegetative cover, and by loosening the soil exposed to the action of water and wind) and decreased fertility and structure of the land. He is responsible for the increased soil erosion. Livestock movements disfigure hillsides and trigger a mechanism of erosion can result in the formation of gullies. It should be added that the pasture, compacting soils, deep structure and hence weakens their ability to infiltrate.
9. Increased livestock production in grazing lands and the introduction of livestock in some areas may have negative impacts on wildlife and conservation areas for wildlife . Indeed , competition for water resources and vegetation may intensify and also farmers may consider wildlife or as a source of meat is as undesirable elements ( as predators threatening livestock) and hence , make their killing. Many examples show that domestic and wild animals can coexist , feeding from different resources and avoiding excessive competition. There are areas where the breeding of wild species proved far more efficient than livestock production and , therefore , should be considered as a possible solution for the production of meat and skins. Tourism and turf are also possible solutions.
10. The loss of vegetation and increased erosion of soils occur frequently around water points where herds congregate. In order to limit the



destruction of resources, there should be a greater number of water distributed strategically points and which are closed at certain times of the year. By cons, poor planning, inadequate site selection and management and control of water points insufficient may give rise to a combination of problems and increase the severity of droughts. The deep wells can also lead to serious degradation of the land around it and lower the level of the groundwater, which also affect the local vegetation. The water points used for both humans and animals are obvious health risks.

### **Pastoral management**

11. Pasture management techniques to increase the productivity of grazing lands include: mechanical and physical work on soils and vegetation ( eg soil conservation techniques and water such as making contours, clearing. undergrowth ) planting, seeding and reseeded of selected species ; burning vegetation smoking or use of chemical fertilizers and pest control . Conservation measures of soil and water as well as the planting of vegetation help to curb erosion , while clearing by burning brush represents , however, a risk of increasing erosion, s it is not made with caution. The significant soil erosion is not only responsible for the decline of land productivity but also helps to increase levels of sediment in the water and decrease in quality.
  
12. Grazing management techniques that seek to alleviate the pressure of livestock on the land are to change the season, length and order of occupation of certain areas by livestock and set the number of heads livestock , species composition and movement . The most common methods for controlling the pressure of the animals used in rotational grazing , their enclosure and install water points and salt supply ,



strategically. Other useful management techniques are to organize the marketing of livestock products and to exploit the pastoral lands of dry and parks pâturage. Le burning is the oldest practice season in which man has used to make to regrowth and maintenance of plant species including cattle depends . This technique eliminates unwanted brush and tall weeds , destroy the weeds of bad quality and indigestible and encourage the growth of more nutritious and digestible forage species. Burning is also used to increase forage production and improve the taste of herbs. It remains , however, that accidental burns or mismanaged cause wildfires serious soil erosion.

### **Livestock management.**

13.The possibility of increasing animal populations based on livestock management and monitoring of pastures. To improve the performance of cattle it is important to develop veterinary care, breeding techniques and selection. . Selective breeding is a risk of poorer long-term natural genetic variability of cattle, therefore, will have a lower resistance to disease and less ease of adjustment to climate hazards.

14.In times of drought, it is important to find alternative sources of supply to ensure the profitability of farming. . It is therefore necessary that the programs or projects include the supply of cattle feed until pastoral resources are replenished. The deployment of herds released too early can seriously damage grazing lands.

## **Problèmes spécifiques**

### **Production de bétail dans les forêts tropicales humides**

15. Clearing of moist tropical lowland forest lands or using land already cleared for other reasons for livestock production has proven to be an unsustainable practice with disastrous environmental impacts. Clearing of large areas of forest land in Amazonia and subsequent conversion to cattle production, has degraded the land irreparably and rendered it useless for other purposes. Large-Scale cattle ranching in these areas is highly unsuitable and should be discouraged.

- Problem of illegal grazing in protected areas
- Problem of cross-border transhumance

### **Social and Cultural Issues**

16. Rangeland management systems and socio-economic patterns and conditions are intimately linked. A decline in rangeland productivity will through natural (e.g., climatic) or humanly driven forces, will have negative impacts on family income, health, and the distribution of scarce resources between people. Conversely, socio-economic factors such as labor availability, distribution of tasks within families, land use and resource rights, property ownership patterns, and market conditions affect how the range and livestock resources are managed.

17. Many rangeland areas are in a state of transition. The most important social and economic changes in these areas include: (a) increased



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involvement in wage-labor markets; (b) transformations of indigenous tenure systems and organizations; (c) encroachment of dryland agriculture and irrigation into rangelands; (d) increased involvement of pastoralists in commodity markets; (e) increased sedentarization and settlement that is often encouraged by state and donor policies and programs; and (f) fluctuating terms of trade for pastoral produce. In terms of their potential effects on the physical environment, the most important variables to identify are income and welfare levels, labor availability, and land/population ratios. Changes in these are likely to affect how physical resources are managed, as are changes in people's traditional access to resources.

18 The key of social issues which must be considered before developing any livestock or rangeland management project are spacial and temporal dimensions of rangeland economics; resource tenure and local management; property rights, distribution, and welfare; and labor availability.

19 Livestock production systems in rangeland areas are land extensive. The mobility of human populations in rangelands tends to increase in relation to aridity, with the most mobile populations residing in arid and semi-desert zones. It is critical, therefore, to identify the physical expanse and ecosystem types that livestock exploit over a full "drought-to-drought" cycle (7-10 year period), particularly the lands and water resources that are critical to the survival of the overall production system. Loss of access to lands due to agricultural encroachment (either by outsiders or the herders themselves), settlement projects, the creation of national parks, and other activities will reduce land available to extensive rangeland production and decrease



land/population ratios. Critical dry-season areas diverted to non-range use can be particularly detrimental to the livestock herders. Finally, reduced mobility due to physical barriers (e.g., fences, settlements) or government policies favoring sedentarization and settlement will affect the flexibility necessary for optimizing the use of the range resource.

21. In areas where rangeland is a common property resource, most local communities have (or had) either formal or informal institutions for regulating access to pasture, water and other resources. The use of communal land was often based on land ownership or user rights over various ecological zones with nomadic production systems. Government policies to settle nomads, the desire of the population to become sedentary, or appropriation of land for irrigation schemes or other development projects have reduced the total land area and ecological distribution to the point of radically changing social structures and production systems. These changes either preclude livestock production or require increased imports for animals. Government policies on subsidies, taxes and product price fixing have often favored crops over livestock with the resulting misuse of lands with little or no economical crop production potential. This has further exacerbated the impact on social and cultural systems. It is critical to identify both these traditional local rules for regulating access to resources (and how these rules have changed over time) and the government policies and programs influencing local tenure practice. The local organizations and individuals responsible for overseeing tenure regulations, and the class, age and gender characteristics of these organizations, should be examined. Not only should these entities be involved in the design of a project, but equal consideration should be given to those which will be affected, particularly when their concerns are not adequately represented by





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the controlling bodies. The pros and cons of altering property ownership patterns (e.g., shifting from a system of common property resources to private land ownership) must be carefully weighed in light of local social patterns.

22. It is of the utmost importance to understand the ownership of livestock systems to be able to formulate a draft pasture management. . It is dangerous to try to match the number of cattle in the capacity of the pasture without first understand the dynamics underlying the ownership, without knowing the number of livestock per household needed to meet their needs and maintain an economically viable system. The danger is that if the number of livestock per household is limited (rather than the number of households involved in livestock production) in order to reduce the pressure on land grazing, so we may see the number of animals per household is reduced to a unit that is no longer economically viable, forcing the poor to abandon production.

21. Income distribution and intrahousehold property rights (e.g., those based on gender and age) are also frequently skewed. In addition to information on the general distribution of property and income among and within households, the following factors must be understood: the extent to which management and ownership of property are vested in the same unit (e.g., wealthy segments of the populations, from either within or outside the community, acting as absentee owners, and hiring local herders to tend their animals); the extent to which certain categories of property (e.g., goats and sheep) or sources of income (e.g., income from milk sales) are controlled by women and if development activities have eroded the income-earning activities of women; and the extent to which certain types of resource management and production activities can be distinguished by wealth or income category.



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22 Since rangeland production systems generally are carried out in areas of low population density, they often suffer from labor shortages. Lack of labor affects herd movement, mobility, and certain conservation and resource management techniques. The issues to be assessed include: diversification of the local production system (the degree that mixed cropping, wage labor opportunities and other nonfarm activities affect the availability of labor for livestock production); the extent to which engagement in nonfarm activities by males increases the workload of women; and the extent to which labor shortages and low incomes affect local management strategies and are associated with disruptive resource management practices.

In areas which are more densely populated, with limited range resources, or in ecologically sensitive areas such as mountainous lands, restriction of livestock movement may be encouraged to limit environmental degradation by shifting to a system of stall feeding animals. While this may be environmentally more sound, access rights to forage and fodder resources may be unequitable, or the concentration of ownership of land on which livestock feed can be grown may preclude the involvement of the poorer and landless in such a scheme. Such factors must be taken into consideration in project design.

21. There are few alternatives to livestock production in rangelands as it is generally the most suitable land use available for the climatic conditions. One possibility, although limited to certain areas and circumstances, is wildlife ranching. Management of wildlife as a sustainable system potentially can increase the productivity of the land in terms of meat, hides, skins and other products while minimizing environmental destruction. This success of such a system, however, depends on numerous variables, not the least of which is marketing. Wildlife-based tourism, recreation,



controlled hunting, and rainfed dryland farming are other alternatives.

### Management and Training

21. Government policies and programs designed to increase livestock production often affect the range resource and welfare of producers negatively and promote economic inefficiencies and social inequities. Livestock policies have often worked counter to development assistance in livestock production. Policies, programs and legislation should be reviewed for their social and environmental impacts. Producer groups which can provide services, represent the individual producers, and facilitate marketing may need to be established or strengthened.

27. Government policies (e.g., on livestock prices and import and export controls) are often aimed at keeping consumer prices for livestock products low. Then to compensate the producers, governments offer subsidies allowing producers to purchase inputs below their real value, provide free services or offer subsidized credit. This creates an artificially bolstered system which may lead to inefficiencies, inequities (favoring the large over the small producers), investment distortions, and the degradation of range resources through inappropriate land use. It also tends to favor capital intensive operations using feed concentrates over forage-based systems<sup>28</sup>

28. Government research and extension services are often lacking. They commonly focus on intensive, import-dependent production systems which are not financially viable for the majority of livestock producers. Extension services are often hampered by inefficiencies, lack of funds, and inadequately trained extension agents.

27. Traditional social structures are breaking down and are not being



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replaced by producer organizations to monitor use of common lands. Legislation defining land ownership and user rights, particularly on common lands, is often weak or unenforced. The lack of producer organizations hinder marketing and the gap is filled by middlemen who siphon off the majority of profits. Producer groups can establish and regulate land use patterns, livestock management systems and livestock numbers; provide services now provided by the government; and represent the livestock producers when working to influence government policies and research priorities.

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32. It would be important to develop a research program based on the needs of producers, especially when it comes to pasture and livestock. In addition, research should be undertaken on the development of a range of technologies that may be suitable for small producers with limited manpower. The area of farm forestry that integrates livestock and crop of tree groups arranged in a certain pattern would need to be studied and pastoral practices should be examined from the point of view of their economic and environmental sustainability. Monitoring

27. Factors to be monitored in a livestock project should include:

. range condition (assessment of present state of health of the range in relation to its potential) . range trend (direction of change of range condition) . availability of and access to natural fodder and forage, cultivated fodder, and imported feedstuffs (in stalled animals) . numbers and types of animals . seasonal distribution and movement of animals . condition of the livestock (weight, presence of disease, other health indices) . condition of the soil (i.e., signs of increased erosion, compaction,



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decreased fertility, etc.) . water points (location, condition, and intensity of use, and condition of vegetation around the water points) . market conditions (changes in price, development of alternative markets, etc.) . changes in economic indices of livestock producers (e.g., income levels and health) . changes in social organization . external land use changes and demographic changes which have impacts on the range resource and livestock producers . changes in wildlife populations and habitat due to live stock production

### negative impacts table of livestock and pasture management and mitigation...

Negative potential impacts	Mitigation measures
<b>Directs Impacts</b>	
1. Degradation of plant resources caused by overgrazing	1. • Restrict the number of livestock. • Exercise oversight over the duration of grazing in some areas. • Mix the animal species to optimize the uses of plants. • Ensure reseeding and renewal of forage production. • Make the cut fodder and transport. • Select strategic location of water points and salt supply.



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2. • Increased soil erosion caused by the clearing of vegetation and trampling by livestock. • Increased salinity of surface waters.	• Restrict livestock access to unstable terrain (eg. Slopes). • Implement measures against soil erosion (eg. Reforestation, reseeding grass, land preparation and earthworks).
3. Declining soil fertility and deterioration of physical characteristics due to: • Removal of vegetation • increasing erosion • soil compaction	3. Same measures as for 1 and 2

