




# MOBILITY AND CONSERVATION PROGRAMMES FOR ANIMAL GENETIC RESOURCES

## KEY MESSAGE

- *Animal mobility is a system of resilience for animals and for livestock keepers.*
- *Livestock mobility-associated pastoralism is the only effective way to support human existence in harsh environments and often represents the only sustainable approach to land use in such areas.*

## INTRODUCTION

Mobility is often regarded as an important characteristic of pastoral societies and their ways of production in Africa. Herder and livestock mobility has often come under severe criticisms for what is said to be their wanton destruction of the environment. Over time, there has been a universal decline in livestock herd mobility, and the number of animals involved has tended to be stable rather than expanding. This is mainly caused by a variety of factors including human population growth, loss of grazing lands and routes to private farms, ranches, game parks, and urban areas among others. Climate change will continue to cause changes in temperatures, precipitation, as well as changes in the frequency of droughts. The overall impact of these long-term trends would include degraded pasturelands and decreased amount of land suitable for rangelands and pastures. Although adaptation strategies are been put in place in several countries, the overall assessment is that climate change will have net negative impacts on Africa's AnGR, in terms of distribution and productivity. Increased commoditization of the livestock economy, out-migration by poor pastoralists, and periodic dislocations brought about by drought, famine, and civil war have also contributed to loss of grazing lands. Other factors include gradual erosion of the traditional household structure and cooperative herd management system; and a period of repatriation in an attempt by some to regain political autonomy.

Whereas, for some large-sized countries livestock mobility may be limited to movements from agricultural zones more endowed with feed resources and water to the more feed deficit and drier zones, mobility between countries do occur. Broader strategies that support effective livestock mobility within local production systems, strengthen pastoralism, and take into consideration livestock issues such as management, conservation, structured crossbreeding and utilization of AnGR, are deemed necessary in many situations in Africa. There is evidence to show that seasonal transhumance has effectively contributed to sustainable animal production in such pastoral systems where mobile herds are moved from one favorable area to another. In this way mobile livestock producers have maintained, over a wide geographic region, a larger and more productive livestock population than could be sustained by separate herds each confined to its own small area.

Factors and issues relevant for mobility of AnGR in Africa are discussed in the paragraphs below.

## *POLICY RELATED ISSUES*

- Some African Governments in the last decade have taken the initiative to promote the use of the indigenous AnGR breeds. Since livestock mobility takes local AnGR to new areas, and the breeds on mobility generally have adaptive traits, the practice directly promotes the establishment of herds and flocks in areas where they never existed or where numbers were limited.
- There are many reports that degradation of rangelands and pastures has occurred where livestock on mobility have overgrazed, especially around watering points. Degradation is more rampant where the numbers of the stock on mobility are particularly large. Overgrazing and its attendant degradation often negatively impact on the herds/flocks through high livestock mortality.
- In some of the Southern African countries, such as Botswana and Namibia, where pastoral or agro-pastoral herds have restricted movements by fencing erected by ranchers, it is common for the animals on mobility to face grazing shortages, and mortality of animals due to bush fires. These effects have thus contributed to the loss of valuable genetic material.
- Keeping large herds of livestock close to villages usually ends in conflict as livestock damage crops and other properties. Although some countries have passed specific legislation to protect and enhance regional livestock mobility and trade, severe conflicts between pastoral transhumant herders and resident crop farmers have increased in the past few years.
- Many farmers continue to engage in breed replacement programmes where high performance exotic breeds are kept in preference to indigenous AnGR. The impact is a massive dilution of local AnGR. There is often uncontrolled crossbreeding as a result of communal grazing when animals are moved to the mountains in the cattle posts during summer in Southern African countries, and in West and East Africa, when animals graze on open harvested fields.
- Movement of livestock is known to have resulted in the spread of diseases. Mortality resulting from the disease spread has contributed to loss of valuable AnGR. Outbreaks of notifiable diseases of Foot and Mouth disease (FMD) in cattle, Newcastle disease in chickens, African Swine Fever (ASF) in pigs have been associated with livestock mobility. In an attempt to control the aforementioned diseases, animal health policies and legislation have often been formulated and enforced. These policies and legislations often pose obstacle to pastoral mobility. Veterinary cordon fences, used mostly in some countries, represent the lynchpin of the disease control system, they impose or enable livestock movement controls upon otherwise open-access communal rangelands and

pastures.

- Several trading and marketing strategies employed in some countries do alter the age-sex composition of rural herds and flocks, as well as the livestock populations in the rural communities. The Basotho community in Lesotho has preference for local chickens and duck meat and eggs for which they purchase at exorbitant prices, and thereby promote "over-harvesting" of the local animals and products in the rural areas. Availability of such products to vulnerable groups such as children may be affected by such practices. In Malawi some communities prefer indigenous uncastrated male goats for their religious celebration ceremonies. This has led to a decrease in the number of indigenous male goat breeds which are required for breeding. In a similar "over-harvesting" practice, Sudan and Somalia regularly export live sheep and goats to the Middle East. This directly impacts farmers who breed animals for specific and ready markets in the countries.
- Unlike West Africa where there has been a regional policy on mobility of herders and their livestock for nearly 20 years, the development of such regional policy is at its infancy in East and Southern Africa where the protocols are being developed. Until the finalization of the processes in the latter two regions, some of the existing policies and legislations will remain unclear, and incentives/interventions on livestock mobility and commercialization will remain feeble and underdeveloped.
- Studies investigating how genetic composition can lead to the identification of threats to population persistence have highlighted some important factors affecting populations such as low levels of variation, the accumulation of deleterious alleles, and introgression of genes from other species or populations. There is a need to assess the admixture levels occurring in transhumant farming as a result of gene-flow between genetically differentiated populations (genetic pollution potentially causing uncontrolled introgression) and to describe what occurs during transhumance in terms of mating choices and breeding decisions. Information from admixture scenarios can be used in identifying genetic linkage and heritability as in congenital diseases, biogeography and historical population origins, and in more contemporary population genetics and conservation contexts.

## *LESSON LEARNED ON THE EFFECT OF MOBILITY ON ANGR*

### Increased diversity of AnGR

Introduction of breeds to countries through mobility and trading of livestock has diversified the genetic composition of local AnGR base. Inter-breeding among local livestock breeds due to inadequate breeding control during commercialization has influenced the genetic diversity, but has also contributed to non-descript populations. While this random breeding may be contributing to diversity, the genetic diversity may not be available for future exploitation, for instance where animals are sold off for slaughter.

**Non-descript livestock breeds**

Non-descript livestock breeds is the result of uncontrolled breeding occurring during livestock mobility. None of the countries implement any form of breeding control (separation, or use of deterrent gadgets) except where the animals being sold are castrated bulls.

**Loss of good quality breeding stock**

Mobility and commercialization limits availability of good quality breeders. Young male animals (except chicken) with the best qualities (weight and production) are preferentially fattened by castration and sold to fetch the highest market prices. This sale of best male animals has depleted genetic potential of the remaining herds.

**Loss of adaptive traits**

Indiscriminate crossbreeding of local AnGR during mobility has resulted in reduced tolerance to drought, diseases and parasites and eroded their capacity to trek over long distances in harsh (arid/semi-arid) climatic conditions.

**Livestock corridors and pastoral services**

Livestock corridors and services along mobility routes are poorly established in most of the African countries. The absence of clearly demarcated stock routes and services such as watering points continues to create avenues for conflict and exacerbates marginalization of pastoralists. Due to this, opportunities to maximize revenues from pastoralism have been missed. Furthermore, veterinary services are generally poor along the routes, but even more wanting in marginal pastoral areas. Given the challenge of transboundary animal diseases, there is need to invest in affordable and accessible veterinary services, taking into account the logistics of servicing highly mobile pastoralist communities.

**Monitoring of livestock movement**

There are currently no sustainable solutions for livestock identification and traceability systems in place in Africa. Given that previous programs of livestock traceability programs were piloted in East Africa including South Sudan, Sudan, Uganda and Kenya, there is need to reanalyse them to identify reasons why they were not implemented to scale. These considerations should lay a basis for building sustainable traceability systems appropriate to the low-resource settings in most part of Africa.

**Control of breeding during livestock movement:**

The lack of regulation of breeding in the course of pastoral mobility and livestock movement to markets has accounted for uncontrolled crossbreeding and interbreeding which impact negatively on the AnGR base.

## *SETTING THE POLICY AGENDA*

Among the proposed solutions to the issues and problems raised on mobility of livestock are:

**Adopt regional approaches**

A regional and participatory approaches governing the mobility of animals and for addressing the challenges that are faced (including transhumant passport, certification, processing of documentation, capacity building, harmonization of biosecurity protocol, identification and traceability systems, existing protocol not used). The cross-border nature of the pastoral communities needs to be addressed through regional approaches. There has been progress towards this with the creation of ECOWAS protocol. However, the development of similar regulations in the other regions (SADC and IGAD), are in infant stages.

**Introduce monitoring systems**

A monitoring system is required to identify population trends (species and breeds) in pastoral communities. There is a lack of a systematic recording and monitoring system for the movement of AnGR within and between Southern African countries. Similar situation prevails in West Africa where the ECOWAS protocol has been in existence for 20 years. In addition, no account is taken of off take for sales, loss through mortality or raiding, or the slow growth rate of cattle. This is calls for of a systematic mechanism to monitor and follow up the displacement of the animals avoiding loss of valuable genetic material due to ineffective mobility at both national and regional levels.

**Promote the use of multi-species and multi-breed herds**

Given the potential for significant future changes in production conditions and in the objectives of livestock production, it is essential that the option value provided by animal genetic diversity be secured. The use of multi-species and multi-breed herds is one strategy that many livestock breeders use to maintain high diversity in on-farm niches and to buffer against climatic and economic adversities. Such traditional diversification practices are useful for adaptation to climate change

**Improve relations between the transhumant pastoralists and the host communities**

Benefits of mobility vary with different actors involved and social relations between the transhumant pastoralists and the host communities. For transhumant pastoralists, the benefits include herd productivity (more milk and improved herd reproductive performance), reduction in herd mortality which implies preservation of livestock asset of the pastoralists, low production cost involved and opportunities to build social relationships with the host communities. For the host communities, the benefits of transhumance include manuring of crop fields by transhumant herds and availability of milk from transhumant herds. The

movement of livestock from the drier areas to the wetter ones especially during the dry season often results in unintended and even intended crossbreeding between the larger frame ruminant livestock from the arid and semi-arid areas to the wetter dry sub-humid and humid areas. Transhumance increases the interest of livestock breeders to own, for example, Zebu and facilitates their acquisition. Indeed, the farming system is of extensive type and characterized by wandering of animals during the dry season, making difficult the control of crossings by the breeder. The herders (not always the owners of the animals) are sometimes involved in the control of the reproduction of cattle and small ruminants, with the purposes of deriving an economic interest.

**Harmonized trade regulations and laws**

Harmonized trade regulations and laws that allow for the import and export of trans-boundary breeds would be needed since cross-border mobility is also critical for the maintenance of high pastoral livestock productivity. Pastoral systems have complex rules of access to, and management of natural resources such as land and pastures. Past policy interventions that did not take into account these unique circumstances and rules regulating pastoral systems and production, as well as the management of pastoral lands, resulted in economic and political conflicts in pastoral areas of the Southern African region. The occurrence of such conflicts calls for the development of harmonized programmes and frameworks and institutions to guide pastoral systems.

## *POLICY OPTIONS AND RECOMMENDATIONS*

Proposed policy options and recommendations to minimize conflicts and promote responsible mobility of livestock include the following:

- The Governments in East Africa and Southern African countries as a matter of urgency should complete their on-going cross-border protocols, including the development of their International Travel Certificate (ITC) in order to facilitate regional trade in livestock, as the cross-border mobility has proven to contribute significantly to national and regional economies and food security, particularly in pastoral areas. The experience in the COMESA region showed that when cross-border livestock sales are banned, governments discover that they have to bring in food aid.
- Governments, especially those, where ranching of livestock is a policy, and thus pay less attention to pastoral production systems, and often legislate against mobility, should examine the recent published information on the productivity of pastoral herds and their newly appreciated contribution to national and regional economies, and revise existing policies and legislation that are not favorable to mobile herds/flocks, and pastoral systems of production in general. This calls for the need to formulate, enforce and strengthen existing regional AnGR transboundary agreements and frameworks to regulate livestock movements and to ensure strong conservation programmes for

animal genetic resources

- Governments are urged to create monitoring and recording programmes for movement of livestock to secure livestock mobility at local, national and regional levels. Governments in regions where transboundary breeds exist should in particular engage their RECs for their involvement in recording and monitoring of movements of livestock, as another layer of trading activities and prevention of cross-border conflicts.
- Governments should develop and put in place mechanisms for consensus building among all actors, and support the communities along trade routes by investing in livestock corridors development and basic services along their routes in areas such as water points, resting areas, access to markets, disease control clinics, etc.
- Governments should develop and provide pastoral land use management mechanisms and consider tenure arrangements that focus on rights of access and control rather than ownership and which accommodate multiple use and over-lapping rights of access, especially in areas where there is need to protect the rangelands as communal areas under controlled access management systems.

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