LIVESTOCK PRODUCTION SYSTEM IN BOTSWANA THE SO-CALLED "BOTSWANA MODEL": PRIVATIZING THE COMMONS, A TRADE OR TRAP?

By

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Preamble.

The information provided in this report is as a result of a study tour to Botswana, which was organized by the Tanzanian Pastoral and Hunter-Gatherers Organization (TAPHGO).

The Tanzania Pastoralists and Hunter Gatherers Organization (TAPHGO) is one of the leading civil society organizations in East Africa that is active in supporting the development of the pastoralists and hunter-gatherer communities. TAPHGO envisages a society whereby the interests of the pastoralists and hunter-gatherers are recognized and their basic rights related to natural resource such as land tenure, secure livelihood and cultural values are upheld, protected and promoted in their natural habitat.

The purpose of the trip was to gather data and relevant information on livestock production system in Botswana, the so called "Botswana model" with the view to enable TAPHGO to make an informed contribution to policy formulation on livestock production in Tanzania as the government plans to modernize and commercialize livestock production in the country.

The ¹delegation that constituted the team involved in this study tour was mandated to focus on the pros and cons of the new *Botswana model* of livestock production, with the view to whether it can partly or wholly be replicated in Tanzania.

It is hoped that this report will be used as additional knowledge to inform livestock policies being formulated in Tanzania in particular and generally in East Africa.

¹ Members of the delegation, Hon. Timan, M.P Ngorongoro constituency, Mr. Eli –Programs Officer-TAPHGO, Mr. Z. Ubwani- Journalist (Environment) and Dr. P.M. Makenzi, Lecturer Egerton University

and Associate Researcher of RECONCILE -Resource Institute-Kenya.

Introduction.

At independence, and until the discovery of valuable mineral deposits in the 1970's, the cattle industry in Botswana was the major source of income and the country's major revenue earner.² Although its importance has been reduced by the growth of the diamond industry and increasing revenue from tourism, the livestock sector still continue to be one of the major sources of income in rural Botswana.

The Botswana Model

What is referred to, as the *Botswana Model* is actually the Botswana government's efforts, since 1970's, to guide and facilitate farmers to commercialize livestock production through investing their resources to develop better and more efficient livestock production units. The emphasis is put on, increasingly, privatizing the commons (communal grazing lands) through fencing of ranches³. The purposes of fencing being to increase livestock production enhance its quality and reduce rangeland degradation.

This report examines the advantages and disadvantages of the *Botswana model* with particular reference to predominant livestock production systems, cattle-post system in communal tribal grazing areas, the pros and cons of the recent government's fencing drive of the ranches in relation to wildlife conservation. Further, efforts towards production and commercialization of livestock farming and the policies behind these efforts namely; the initial Tribal Grazing Land Policy (TGLP) and later the National Policy on agricultural Development (NPAD) on communal tribal grazing areas, privatization of livestock farming and the impact all these have on the livelihood of the poor pastoralists are examined.

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² Richard White, Livestock and Land Tenure in Botswana, (unpublished)

³ Richard White, quoting TGLP and NPAD-documents during the interview the team.

The Predominant Model of Pastoralism in Botswana.

Interviewees of this study tour, who included, government officials, private consultants, professionals from the University of Botswana and local community members could not cite a single model related pastoralism that can be said to be predominant in Botswana. However the following models were mentioned:

1. Traditional Agro Pastoralism

Traditionally, actual Nomadic Pastoralism in Botswana was not practiced, agro pastoralism, where sedentary livestock farming, with some minimal management of pastures and growing of agricultural crops for subsistence was practiced.

The traditional agro pastoralism was, and is still practiced in communal tribal land. Where control of land previously was under the chiefs, is now under the land control boards. About 70% of cattle population, 50% of sheep and 90% of goats are in the hands of communal producers.⁴

2. Commercial/Private Mode of Livestock production

This is practiced in the Private ranches, which are under freehold land tenure category. Commercial mode of livestock production is also practices in the tribal grazing land policy (TGLP) ranches under leasehold tenure arrangement. 50 % of the national herd is believed to be under this mode of livestock production.

N.B.

What might be called in Tanzania Zero grazing which in most cases refers to use of supplement feeds is practiced by speculators who after buying the animal for immediate resale confine them in order to fatten them to increase their profit.

⁴ Perking, J.S. Botswana: Fencing out the Equity issue, 1996 Journal of arid environment

Historical Perspective of Land Tenure Arrangements in Botswana.

The current situation prevailing in Botswana in as far as land tenure arrangement, livestock production and even governance, has strong bearing on the country's pre and postcolonial history.

The team leant that unlike most former colonies in Africa; the powerful chiefdoms in Botswana that existed in pre-colonial period were not fully striped of most of their powers. Richard White (Pers. Com. 20 Jan, 2004) stated that, in Botswana, over the period since it became under British rule in 1885, as a protectorate, the British pursued a policy of indirect rule which involved minimal interference in the internal governance and traditional customary law of the indigenous people (Richard White). This might explain several scenarios prevalent in the country even today, small percentage of freehold land, mainly by the whites (4.1%) and less than (36%) of land held by the state compared by a large percentage communal tribal land (70%).

Richard White further told the team that, due to its lack of known mineral resources in pre colonial period, low rainfall then and even now, powerful and well organized traditional chiefdoms (*merafe*), Botswana was far much less affected by colonial rule than any other country in southern Africa. Unlike in Zimbabwe, in Botswana, not more than 6.1% of the land was ever alienated for free hold, mostly to be owned by the white farmers.⁵.

Pre-colonial land policies

The chronology of land policy during the pre-colonial era is as follows;

In 1895, the African chiefs representing the main Tswana tribes agreed that the government could take tribal land for the construction of the railway along the Transvaal border. The railway was finally built well inside the strip and much of the remaining land sold to white farmers as private ranches.

In 1899, the territories of the five main Tswana tribes were demarcated as Native Reserves. Over a period of thirty years later, four reserves were created. Land outside

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⁵ Richard White op cit fn 1

these reserves was demarcated as Crown land and the non-Tswana occupants could be evicted at will.

Livestock production as industry was given special focus by the colonial government since 1899. This period up to 1966, so a significant increase of national herd of Tswana breeds and by 1934 the country had 1.2 million cattle. The livestock market for Botswana meet in Europe was developed in as early as $1950s^6$. This was following the Colonial Development Corporation's major investment in livestock ranches and abattoirs (Lobatse) in particular. To encourage livestock production, boreholes were drilled in tribal grazing areas and by 1966, large areas of state land were occupied communally and used for livestock production under customary law.

Post-Independence Land Policy

Botswana got Independence in 1966, by then, according to the Constitution, the Crown Land Act protected every person from 'deprivation' and 'expropriation' of property without compensation. In 1966 the **State Land Act** replaced the Crown land, and empowered the state to evict residents such as the Baswara of the Central Kalahari Game Reserve without compensation for the loss of access to their ancestral lands.

In 1968, **Tribal Land Act** was enacted; it paved the way for the creation in 1970 of Land Boards to take over customary land administration and allocation by the chiefs.

The Tribal Grazing Land Policy (TGLP) damned as the most important land policy in regard to rangelands management was enacted in 1975. Informed by "range succession model" or theory, it tried to address rangeland degradation by encouraging ranching through the allocation of exclusive rights to groups and individuals on newly designated grazing commercial land, which had to be fenced. Under the TGLP, tribal land was to be demarcated fenced and allocated to individuals or syndicates on leasehold basis for 50 years. The TGLP did not succeed in addressing all the issues it was earlier meant to. That why is the:

National Policy on Agricultural Development (NPAD) was enacted in 1991 but just to reinforce TGLP. The NPAD called for an 'acceleration in the fencing of communal areas',

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⁶ White 1993

it also reduced the area of ranches to be fenced from 8KM by 8Km to 6Km by 6Km the purpose was to have more people to own the ranches, a "one to one" rule was also to be adopted by the NPAD.

In 1993 the **Tribal Land (Amendment) Act**. Which requires Land Boards to work in the interest of all citizens of Botswana was enacted. It forbids discrimination against non-tribe people, even if they have no prior claim. This act limits the rights of tribes and opens up land to speculation by outsiders. (*Ng'ong'ola 1998; White 1998b; Peters 1994; Abel 1993*)

Current Land Tenure Arrangement

As a result of land policy amendments that have take place over the pre and post independence period, three categories of land tenure arrangements exist in Botswana. These are Tribal land, State land and Freehold land. The information obtained by the researchers on the proportion of land that fall under each of the three categories is shown in the table below. This proportions have been changing over time, to the extend that even the ones shown as in 1998 might have drastically changed.

Table: Land Tenure Categories in Botswana

| Year | Tribal Land | | State land | | Freehold land | |
|------|-------------|------|------------|------|---------------|-----|
| | Area | % | Area | % | Area | % |
| 1966 | 278,535 | 48.8 | 270,761 | 47.4 | 21,356 | 3.7 |
| 1979 | 403,730 | 69.4 | 145,040 | 24.9 | 32,960 | 5.7 |
| 1998 | 411,349 | 70.9 | 144,588 | 24.9 | 24,572 | 4.2 |

Source: Richard White

The above table shows that the proportion of land under the communal tribal land has been increasing over time while state and freehold land has been decreasing, this is because of the fact that, the increasing fencing of ranches under TGLP is on leasehold, so the same land is still held under the tribal land tenure arrangement. The state acreage is decreasing because of creation of game reserves and mining areas.

Modes of Livestock Production

As discussed earlier in this report, the cattle industry is an important pillar in the economy of Botswana. Various legislations and government directives have, over the time, been promulgated to ensure quality production of livestock that complies with the European Union (market) standards, the major buyer of Botswana livestock.

The following modes of production systems exist, which include, livestock production through:

- Communal open grazing/cattle post system within tribal land
- Private commercial fenced ranching
- Livestock production based on TGLP ranches
- Livestock production by speculators where speculators buy animals and hold them for a short period to fatten them through grazing and/or use of supplement feeds. These modes are enshrined in the following policy guidelines:

The current Livestock production systems in Botswana are currently based on Tribal Grazing Land Policy (TGLP) of 1975 and the latest National and the New Policy on Agricultural Development (NPAD) of 1991. (Annexed in the hard copy of this report).

Producers of Cattle.

The team observed that the government of Botswana is very keen on the entire process of livestock production. Production of livestock by farmers is encouraged though various government subsidies including allowing tax exception to owners of big cattle farms.⁷ The following are the main producers of cattle:

1. Agro-pastoralists- livestock producers mainly using the communal tribal land. This is the predominant mode of production. The actual pastoralists stay on full-time basis with their cattle either in cattle posts or in their TGPL ranches.

⁷ Some businessmen take advantage of this exception by owning a farm and ask

2. Livestock production by "Cattle Owners"-

Cattle owners in most cases are people livestock producers involved in other sectors of the economy but they own cattle in either the fenced ranches or in the communal tribal grazing areas through cattle post system. They are commonly referred to, as weekend farmers. This is because they visit their ranches only over the weekends when free from their normal duties.

3. Private commercial producers of cattle,

The white farmers who have acquired freehold ranches mainly own these. Their ranches are mainly in strictly fenced freehold ranches. Strict range /ranch management procedures are adhered to, including stocking rates, and to some extent they also use supplementary feeds.

4. Speculators-

They buy cattle from either one or all of the three above, fatten them, and then later sell them at the right time, and at a good profit.

As discussed in the subsequent paragraphs, all these producers receive substantial government subsidies.

N.B. 30-40 % of the population own the 3million cattle in Botswana, however there is glaring uneven livestock distribution where 10% of the population own 50% of the national herd⁸.

Livestock Market Arrangements

Producers of cattle explained above may choose one of the following arrangements for marketing of their cattle.

1. Botswana Meat Commission (BMC)

This is a government institution that is charged with the responsibility of marketing all the livestock products to outside the country markets mainly the EU markets. It

 $^{^{8}}$ Jaap Erntzen- verbal interview by the team on 26^{th} Jan, 2004.

negotiates prices on behalf of producers, and then buys the cattle from the producers to sell on their behalf to the markets outside the country.

2. Private Butcheries

These are market outlets where, cattle producers sell their animals to the local butcheries. This market is not very reliable because the butchers might not take all what a given farmer had planned to sell.

3. "Slaughtering Under the tree" Markets

This is the case where cattle owners decide to slaughter their animals to market the meat locally on their own.

(The approximate price of steer in the local markets is 1500 pullers, while BMC pays 1000 pullers.

4. Cooperatives

This is a situation whereby several small-scale cattle owners come together to form a union for ease of transporting cattle to the BMC. One would expect that a cooperative society should also be in position to negotiate prices with BMC unlike individual farmers.

5. Speculators

These ones buy the cattle from either one, or all of the cattle producers, fatten them, and then sell them at the right time at high process.

Steps to Ensure Quality Livestock Production

The Botswana government with support from the EU has put in several measures to ensure quality livestock production. These include:

1. Zonal fencing: This is a countrywide zoning for the purpose of monitoring livestock movement from one zone to another, the aim is to control transfer of livestock diseases from one zone to the other. The cattle moving from one zone of the country to another are

inspected and subjected to disease prevention measures by being made to pass through the treated dip troughs.

- 1. Fencing-. The government has been encouraging fencing of private ranches and of tribal communal areas through TLGP and NPAD to avoid rangeland degradation and controlled grazing through adoption of appropriate stocking rates. the aim is to improve range management systems, arrest land degradation and finally to improve disease control.
- 2. Vaccination: There is a country wide extensive free vaccination program to control livestock diseases.
- 3.State surveillance: The government undertakes strict cattle surveillance involving counting and inspection of cattle both dead and live.
- 4. There is also strict veterinary control of livestock movement to ensure livestock diseases are contained and eradicated.
- 5. The government has also been involved in the improvement of cattle breed through artificial insemination but use of quality bulls, the team was told, is most preferred by most cattle keepers, the predominant breeds are, Tswana and Brahman, each of which is suitable in given ecological zones in the country but Tswana breeds is dominant.
- 6. Use of supplementary feeds especially by private commercial farmers.

Impact on the livelihood of the Poor Pastoralists

This study found out that fencing, currently being emphasized as the major step to enhanced quality livestock production, has had some notable effects on the life of the poor pastoralists. For example;

Fencing also has been unfair to poor pastoralists in that, if by chance the natural water-pans and salt licks happen to be within the fenced area, the poor pastoralists would not have free access to these resources. For example, the team witnessed several ranches which have been combined to cover over 100,000 hectors belonging to one Dick Eaton all fenced obvious a lot of natural resources must be within this vast area which is fenced exclusively for use by one individual.

- The system of fencing has drastically affected the traditional wet and dry season grazing regimes. Many interviewees mentioned that, the fencing process has reduced the size and quality of rangeland resources to the disadvantage of the poor pastoralists. One, Dr. Michael Tylor, coordinator of the Indiginous Vegetation Project, IVP- a UNDP project being implemented in Botswana, Kenya and Mali, confirmed this information. He is for the idea that the fencing policy needs to be reconsidered, especially, the issue of dual rights that favor the fenced ranch owners.
- As a result of fencing, some wildlife migratory routes have been blocked forcing the wildlife menace to predominate in communal grazing areas.

The government monopoly of the outside markets has denied the poor pastoralist access to outside markets. The BMC is the only body charged with marketing of livestock product outside the country. For example, a 21 year old farmer who inherited a 72,000 hectors of a fenced ranch in Sekoma complained so bitterly about the monopoly of outside markets by BMC and the low prices it buys from them.

Provisions to Ensure Poor Pastoralists do not loose.

Basically there are no provisions to ensure poor pastoralists do not loose out. For example, even though, as admitted by most of the respondents including government officials, the TGLP of 1975 has had some glaring weaknesses, the government went ahead to enact the NPAD, which actually reinforced the TGLP by encouraging more fencing. However, the team observed that there are attempts by the government to support poor pastoralists by providing them with five livestock unit per family as a starter heard specifically to the displaced community. Who had been evicted from veterinary designated areas and resettled in Cqabu in Ghatzi. Because of allocation of starter herds by the government, this has lead to the increase of small livestock holders since

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⁹ The team visited such a community located at CQabo, Ghanzi district, approximately 800 kilometres north west of Ghaborone only to be informed that most of those starter heards died from a poisonous plant "Mukhau" prevalent in the area.

independence. Provisions for loan to poor pastoralists exist in paper but in reality we learned that they are prohibitive because of the stringent conditions to get these loans. ¹⁰ There are no special incentive packages specifically for the poor pastoralists except what is available for all. A senior government official expressed the feeling that the government is not making any deliberate attempt to create or cater for the marginalized. "If the Bushmen would like to enjoy the facilities of Botswana, let them come out of the Bush" said Mr. Kwerepe, a senior government official.

Most of the poor communities are unable to provide for their own basic needs. For example the team visited one community in CQuabo and the chief informed the team that the government gives monthly hand outs of cereals, sugar and cooking oil per month.

Key Players Supporting Livestock Production

The following are the key players supporting livestock production:

- 1. *Financial Institutions* such as the National Development Bank Of Botswana. This bank advances loans at reduced interest rates to cattle farmers through out the country.
- 2. The Government of Botswana through the ministry of agriculture has been providing subsidies in various forms. These include:
- -Bull subsidies
- -Artificial insemination
- -Boreholes drilling subsidies
- 3. *The European Union (EU)* has been supporting the fencing of ranches to ensure quality livestock products for their markets in Europe.
- 4. *The World Bank (WB)* supported the first large scale livestock development project (LDP1 which encouraged the uptake of ranching, based on the model of ranches run by the white settlers, it also supported LDP2 which funded the TGLP in 1975.

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¹⁰ Nathanael as per comm. 23. 1.2004

Ownership of the key factors of livestock production

The ownership of the key livestock production factors differs according to where the resources are located. If they are located within the fenced ranches, then individuals or syndicates privately own them. If they are located in the communal grazing areas, they are accessible to everybody. This is because the dual grazing rights policy exist which allow private and TGLP ranch owners to access the resources available outside within communal grazing areas while, unfortunately, the reverse does not apply.

Other factors of livestock production, for example, provision veterinary services including vaccination are owned by the government, which provides to farmers free of charge. Some privately owned drugs stores exist, which sell livestock supplies to willing farmers.

Livestock Extension Services.

The government, free of charge, provides most of these services. Livestock department offices, meant to provide extension services to farmers, are available in all the districts. The level of skill of service providers is mainly University degree holder, however, paravets are also there.

Land Conservation Arrangements.

Given the topography of Botswana, soil erosion as an environmental degradation process is not a big environmental problem. The problem, which extraction of underground water might pose to the environment, is taken care of by allowing a limit of eight kilometers from one borehole to another. However, as observed by one, Dr. Moleele, a Range Ecologist at the University of Botswana, rangeland degradation exists in some areas as a result of overgrazing due to overstocking, also, as a result of attempts to open large areas of land for agricultural development. The dual grazing rights has also led to rangeland degradation outside TGLP fenced ranches.

Pre dominant conservation approaches in place include,

 Enforcement of conservative stocking rate policy meant to achieve good rangeland condition by minimal stocking and observing carrying capacity of ecological zones.

- The Indigenous Vegetation Project (IVP). This project uses the traditional range management approach in communal grazing areas as a conservation approach.
- The National Conservation Strategy. This is government agency focusing on the conservation of ranchlands within the sand veld and hard veld zones. The activity of this agency includes rehabilitation of rangelands and stabilization of sand dunes.

Dr. Michael Taylor of IVP informed the team of the rehabilitation of degraded rangelands in zone six Boteti where IVP has demonstrated the traditional communal rangeland approach as an alternative model to rehabilitating degraded rangelands.

Legal Aid Support to Poor Pastoralists.

The team observed that there are no any legal aid support arrangements for poor pastoralists when they feel that their land has been disenfranchised. Interestingly however, the team was informed by one government official of an incidence in which some farmers took the government to court claiming their right to be given ranches and fence them. The government on the other hand, he said, was withholding this right for the benefit of poor pastoralists. The government had to, later on, reduce the size of TGLP ranches fro the earlier 8km by 8km to 6km by 6km in order to avail more ranches to the TGLP ranches applicants. It also invoked a control measure whereby one person would own only one ranch. (Unfortunately the government official was unable to give citation of the case).

The Land Boards are responsible in resolving conflicts over the use of scarce resources through allocation, administration and monitoring of the resources. According to Richard White (2003) (Unpublished) More often than not, appointments to the Land Boards are widely viewed as a form of political patronage. This has led to further marginalization of the poor pastoralists who do not have godfathers in the higher government offices.

Tourism.

As a revenue earner for the government, tourism is second to diamond. The ranking is the same; in as far as their contribution to the government's GDP is concerned. The team noted that one of the government approaches to promote tourism is through establishment of the Wildlife Management Areas (WMA) within the communal areas, a philosophy whose sole purpose is to promote community based wildlife conservation and to ensure that the community benefits from the revenue accrued from tourism.

According to one community member in Cquabo village in Ganzi District, he said that WMA arrangements has benefited them by giving them wildlife quarters. However, further investigation by the team revealed that there are no clear procedures as to how the quarter¹¹ is arrived at, so the poor pastoralists are not aware whether whatever they are given, is what they actually deserve for conserving the wildlife and other resources within the wildlife management areas.

The Pros and Cons of Botswana Model

What is referred to, as the modern model of pastoralism in Botswana is the production of cattle through fenced ranches. The first policy of fencing referred to as the Tribal Grazing Land Policy (TGLP) according to Dr. Muleele of the University of Botswana was informed through the range succession model, this fencing model was meant to control degradation in the rangelands, through better range management and to reduce grazing pressure, and enhance the quality and quantity of livestock production. However, due to unpredictable weather patterns, the fencing policy has not fully managed to improve the conditions on the grazing areas, however it was still reinforced by the National Policy on Agricultural Development (NPAD). Nevertheless, some of the positive aspects of the model that could be replicated but with a lot of care include:

- Ranch fencing is able to control infectious livestock diseases.
- Zonal fencing is able to control transfer of livestock diseases from zone to another and from one ranch to another.
- Fencing leads to control of infectious diseases from wildlife to livestock and vice versa.

¹¹ Masego Madzwamuse, Country coordinator of IUCN Botswana as per com 24th January 20004.

- Fencing ensures maintenance of quality cattle breeds.
- Paddocks within the fenced ranches make livestock, and rangeland management easy to undertake.
- Fencing ensures protection of livestock from predators
- Fencing minimizes loss of livestock from theft or straying
- Enhanced quality of livestock products that meets external market standards e.g.
 E.U. market.
- Fencing reduces clashes and or resource conflicts between livestock keepers and crop farmers.
- Privatizing the commons by fencing ensures quality livestock, also might ensure that the "tragedy of the commons" doesn't apply in livestock production, notwithstanding the environmental impact implication.

The Negative aspects of Botswana models that threaten the livelihoods of pastoralists include:

- Restriction of movement of livestock fenced in one place, which might lead to over-grazing, if proper stocking rates are not observed (Dr. Molelee).
- It restricts the traditional wet and dry season grazing system, therefore posing the danger of rangeland degradation.
- It discriminates against free access to natural resources by all, e.g. water and salt licks and specific nutrients that exist in specific areas and which might be fenced.
- It interferes with wildlife migratory routes and makes the unfenced poor pastoral areas to be exposed to the wildlife menace.
- It displaces and marginalizes further some people, especially, the poor pastoralists who cannot meet the conditions set to own fenced ranches.

Conclusion

The new Botswana model of livestock production, though planned and implemented with much care, takes the direction of privatizing the communal grazing area through fencing of the ranches. It aims at commercializing livestock production, and tries to ensure high quality of livestock production. As reported, earlier, Botswana has its own peculiarities in size, climate, population and governance. The dangers of copying this model, wholesome, by other countries like Tanzania, without serious consideration exist, the dangers could be in the inform of environmental disaster, especially if practiced in fragile areas, increased poverty and further marginalization of the pastoralists, a trap which should be avoided at all costs.

In addition, the team, through their interaction with various stakeholders, learnt of the new thinking on rangeland management arising from challenges that faced TGLP of 1975 and the NPAD of 1991 both of which, the two policies have been trying to address, this leads us to conclude that:

- i. The rangeland degradation issues which were set to be addressed have not fully been solved,
- ii. The poverty issues affecting the poor pastoralists have not fully been solved
- iii. The government of Botswana is spending a lot from other sources to support the new model of pastoralism thus success in the livestock sector, cannot be fully attributed to the model itself.

In recognizing all the above, and bearing in mind the indigenous livestock production systems that exist in most parts of Tanzania, this team therefore recommends that since countries differ in many ways, it is important to learn from mistakes others have made in order to improve on what is feasible for our country.

Appreciating that Tanzania is a country of vast variations ecologically, climatically and topographically, there are potential positive aspects of the Botswana model that can, with careful consideration, be replicated successfully in some parts of the country. It is because of the issues addressed in this report that, this team recommends that proper feasibility studies be conducted in different parts of Tanzania to isolate those areas where the Botswana model (fenced ranches) of livestock production can be tried successful.

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