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Unlocking the Potential of Traditional Pastoralism System for Industrialization of Tanzanian Economy

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Abstract¹

Tanzania proudly ranks the third in terms of number of livestock among Sub-Saharan countries. Livestock-related activities contribute about 5 to 7.4% to Tanzania's Gross Domestic Product, and about 30% of agricultural Gross Domestic Product. Of all livestock in Tanzania, 99% is raised by small-holder farmers and pastoralists while the commercial, mainly ranching, constitutes only 1%. The "traditional" agro-pastoral and pastoral systems alone constitutes about 90% of the nation's livestock herd. Traditional pastoralism is a potential source of raw material for Tanzania meat processing industrial sector, an important driver of achieving the Tanzania Vision 2025. The objectives of this review paper are: to evaluate the contribution of pastoralism to the national economy; to describe the characteristics of pastoralist systems; to describe the characteristics of pastoral grazing resources; to evaluate the political, ecological and environment factors that promote and constrain pastoralist; and propose appropriate grazing model and possible means to unlock potential of traditional pastoralism to sustainably contribute towards achieving middle income country by 2025. In general, the mobile pastoralism system, common in the dry, marginal lands and harsh environment has endured for centuries under strategies such as mobility, flexibility, diversity and reciprocity. Stereotypically, traditional pastoralism in Tanzania is perceived as archaic, unorganized, environmentally destructive and unproductive. Livestock Policy of Tanzania recognizes importance of the traditional pastoralism in the national economy although it explicitly favors commercial sedentary livestock system. There is a need to change the negative attitudes among planners towards mobile pastoralism. All the strategies that have enabled traditional pastoralism to persevere for centuries in the harsh environment should be promoted. In addition, other modern strong institutions should be innovated without affecting the traditional pastoralism base.

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1. Introduction

According to the National Bureau of Statistics (NBS), Tanzania had 25.8 million cattle by early October 2015. Over 70% of the livestock population are kept in semi-arid areas in northern, central and western parts of Tanzania (URT 2016). According to Msuya (2017), five leading regions with large numbers of cattle in Tanzania are Tabora (2.74 million), Manyara (2.16 million), Mwanza (2.08 million), Mara (1.88 million) and Shinyanga (1.88 million) (See Fig. 1). Despite the huge number of cattle and other livestock in these regions, they have no many large meat processing plants, thus, the herders do not benefit.

Tanzania land resource totals about 94 million hectares out of which 60 million hectares are rangelands utilized for grazing of about 21.3 million cattle, 15.2 million goats and 6.4 million sheep. Other livestock kept in the country include 1.9 million pigs, 35.1 million indigenous and 23 million exotic chicken (URT 2016). The majority (99%) of livestock in Tanzania raised by small-holder farmers and mobile pastoralists while only 1% of livestock are raised under commercial ranches and dairy farms (Allegretti et al. 2016; URT 2006a).

The mobile traditional pastoralism system in Tanzania is perceived differently by pastoralists, farmers, ecologists, politicians, and planners in terms of its contribution to the national economy and impacts on the environment. Environmentally, it is labeled as environmentally destructive because it causes overgrazing and desertification (Allegretti *et al.*, 2016; Benjaminsen *et al.*, 2009), but some ecologists such as Oba *et al.*, (2000) claim that grazing resources are degraded, not by continuous grazing, but rather by the long-term absence of grazing in that particular resource.

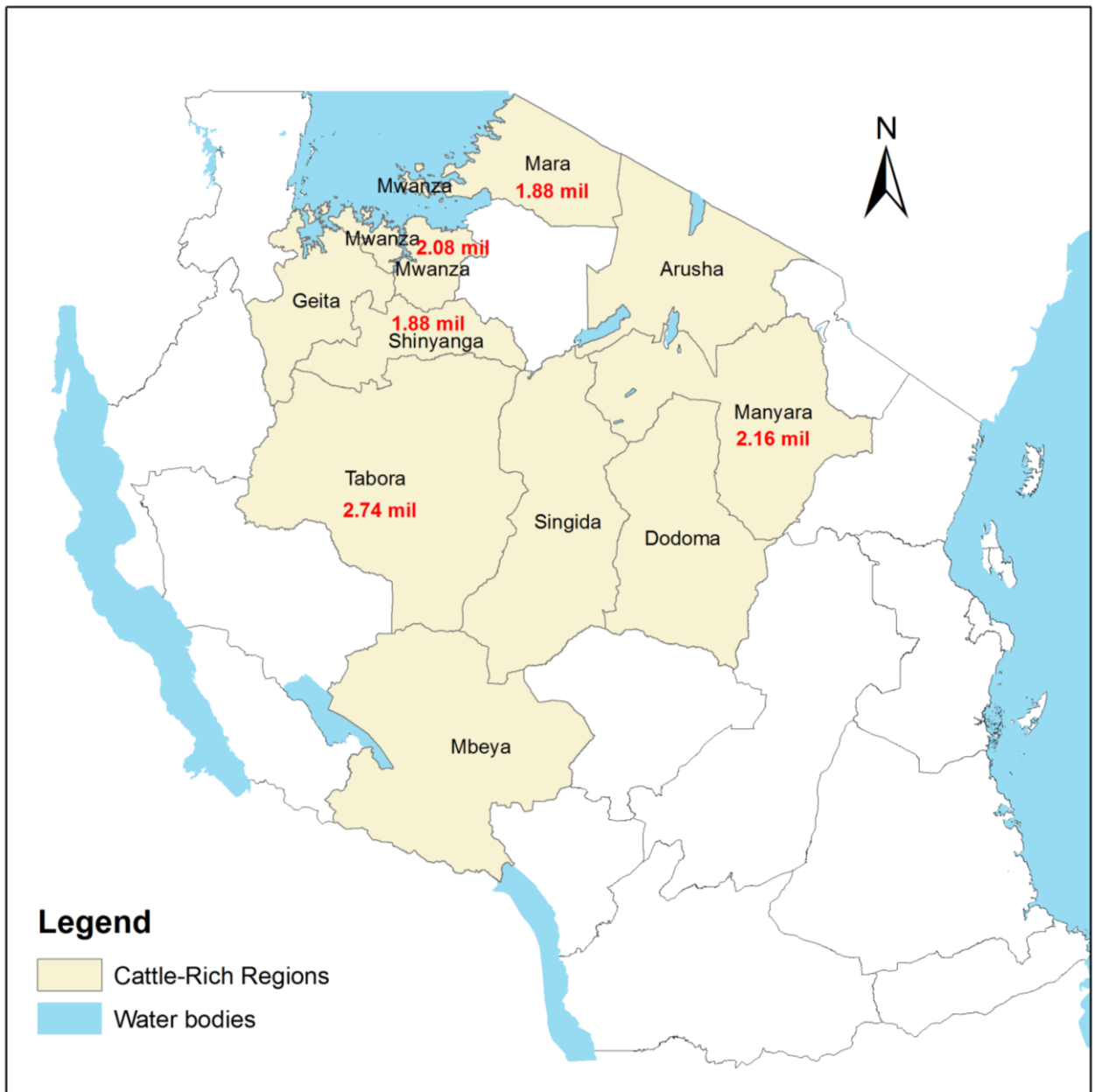


Figure.1: Map of Tanzania showing cattle-rich regions

Source: Msuya (2017)

Economically, despite the fact that livestock sector currently generates 30% of agricultural GDP, and indirectly supports millions of farmers while directly sustaining around one million pastoralists(URT 2006b), still the traditional pastoralism system in Tanzania is politically termed as archaic and unproductive (Hesse 2006). Socially,the pastoralists in

Tanzania are perceived to be quarrelsome and always in antagonistic relations with their neighbors (Cleaver *et al.* 2013). Since it involves mobility, often it is not recognized by governments as generating a viable production system but is perceived to be an archaic and slightly shameful form of traditional behavior that should be stopped as soon as possible to facilitate real 'development' (Randall 2015). With these contradicting perceptions about the economic, environmental and livelihoods impacts of mobile traditional pastoralism system in this era of industrialization of Tanzanian economy, there is a need to review the scientific facts about the traditional pastoralism. The review will help to have a common understanding and perception among Tanzanian politicians, economists, planners and development stakeholders on traditional pastoralism and enable find the ways of unlocking its potential towards supporting industrialized Tanzania economy by 2025. This paper aims to evaluate contribution of the pastoralism to the national economy; describe the characteristics of pastoralist systems; describe the characteristics of pastoral grazing resources; evaluate the political, ecological and environment factors that promote and constrain pastoralist; and propose appropriate grazing model and the possible means to unlock the potential of traditional pastoralism to sustainably contribute towards high GDP and achieving middle income country by 2025.

2. Contribution of Pastoralist to the National Economy

The livestock sector in Tanzania is recognized as having an important potential role to play in building a strong national economy. Livestock-related activities contribute only about 5 to 7.4% to Tanzania's GDP (Maziku *et al.* 2017; URT 2016). Interestingly, about 99% of

the livestock in Tanzania are reared by small-holder farmers and traditional past few pastoralists while commercial ranches and dairy farms constituting the remaining 1%. The livestock sector indirectly supports millions of farmers while directly sustaining around one million pastoralists (Allegretti *et al.*, 2016: URT 2006a). Traditional livestock production takes a lion share in the meat and milk production. In addition, about 70% of total milk production in Tanzania is from traditional sector (Njombe *et al.* 2011).

According to Allegretti *et al.* (2016), the study on economic valuation of pastoral meat production system in Tanzania showed that in Arusha region alone the total economic contribution of pastoral meat production to the economy is estimated to be 46 billion Tsh (29 million USD) per year. The value chain has many actors who derive their livelihoods from the sector. What is more, this contribution excluded other pastoral products such as milk, hides and ecological contributions.

Despite the contribution of traditional pastoralists in Tanzania, it has long debated whether appropriate not due to the contemporary conflicting perceptions on traditional pastoralism by Tanzania politicians, environmental conservationists and scientists (Allegretti *et al.* 2016: Hesse and MacGregor 2009: Oba *et al.* 2000: Oba *et al.* 2003). The perceptions that have been documented in literature include those that consider pastoralism as unproductive, environmental destructive, unorganized, outdated and incompatible with modern world. The supporters of traditional pastoralism such as Fernandez-Gimenez and Le Febre (2006) and IIRR (2014) perceive it as the only livestock production system that is suited to the harsh and marginal lands with low-productivity environments where grazing resources are patchy and unpredictable.

Traditional pastoralism is unproductive

Pastoralist livestock management (mobile transhumance on unfenced, unmodified rangelands) is seen to be unproductive (Homewood *et al.* 2012; Randall 2015). Pastoralism is not recognized by governments as generating a viable production system. Its labeled as an archaic and slightly shameful form of traditional behavior that should be stopped as soon as possible to facilitate real ‘development’ (Randall 2015). This perception has influenced several parts of Sub-Saharan countries to widely believe that modern commercial ranching (particularly of cattle) is more productive than traditional livestock systems such as pastoralism.

Traditional pastoralism is environmental destructive

Pastoralism is labeled as environmentally destructive because it causes overgrazing and desertification (Allegretti *et al.* 2016; Benjaminsen *et al.*, 2009). For instance, in Usangu catchment in Mbeya region, the drying up of the Ruaha River in 1993 was mostly associated with pastoralists and their cattle despite considerable scientific evidence generated through the 1990s that upstream irrigated agriculture was the one to blame (Cleaver *et al.* 2013). Climate change impacts on environment due to increase in global temperatures and reduced precipitation are not understood well by some people in East Africa to the extent of blaming the pastoralists (Gorski *et al.* 2016). The link between climate change and livestock production is due to the fact that livestock destroys biodiversity, degrades land, and contributes to increased water and air pollution, all of which indirectly exacerbate climate change pressures (D'Silva and Webster 2017; Garnett 2017).

Traditional pastoralism is unorganized

National legislation of modern African states tends to favor agriculture, which leaves a visible trace in the landscape as evidence of land use, while pastoral use of land is more invisible and therefore cannot easily be used to justify prioritized access or property rights (Benjaminsen *et al.* 2009). In the actual sense, mobility does not mean being unorganized, but it is an unavoidable good strategy for better and peacefully utilization of seasonal dry land grazing resources and the protection of the environment. The mobility (nomadism, transhumance, dispersion, rotation and migration) is very important for the pastoral system because many range lands face seasonal and erratic precipitation and fluctuations in forage and water availability. Therefore, by moving, there is a possibility to access new pasture as forage quantity and quality changes with use, season, climate and spatial variability (Fryxell and Sinclair 1988: Sinclair and Fryxell 1985). Irrefutably, mobility allows the animals to harvest forage from large area in different habitats and support more animals than if they were stationery. Further, it creates a means to reduce chances to face hazards such as drought, crop damage and resulting fines, and border disputes (Bassett 1986: McClanahan and Young 1996). Ecologically, mobility is beneficial.

Mobility also prevents undue wear on or extraction from the local environment that can have ecological, social and economic consequences. Movement allows grazed vegetation time to recover and reduces erosion from trampling and overgrazing. In the Sahel, animals are most dispersed during the rainy season, when those soils and vegetation are most sensitive to heavy grazing (Hiernaux and Turner 1996). Animals leave agricultural areas during the growing season and return in good condition and able to supply manure once the crops are harvested (Turner 1999). If the herds return early, leave late or find their movements restricted, the nature of the herders' relationship with agriculturalists quickly

changes. By minimizing environmental degradation and reducing competition for resources, movement reduces social conflict between user groups, both pastoral and agricultural (Fernandez-Gimenez and Le Febre 2006). Above all, socially, the mobility allows strengthening ties between different pastoral groups which eventually enables easy reciprocity.

Traditional pastoralism is incompatible with modern world

In Tanzania, the extensive livestock keeping is perceived by policies as incompatible with a modern world; it is no longer able to ensure the food security or livelihoods of rural communities, or contribute meaningfully to national economic growth (Allegretti *et al.* 2016; Hesse 2006). Taking this scenario at African context, a human population is increasing in Africa, the expansion of agriculture and a modern state does not appreciate mobile livestock keeping as a valid way of life or production system (Hesse and MacGregor 2006).

Traditional pastoralism is a backward production system

Mobile pastoralism in Tanzania is considered as a backward production system that should be replaced by sedentary ranching system. Historically, the livestock sector in Tanzania has been an important arena for the debate over the appropriate development the country should undertake. Ideas of tradition and modern livestock production system(s) continue to influence policy making processes with the first, mobile pastoralism, considered backward by policy makers (Hesse 2006), and the second, the ranching system, being highly regarded in policies that touch on the development of the livestock sector as a whole (Allegretti *et al.* 2016).

The anti-pastoral policy environment is gradually pushing pastoralists into a corner and making their access to pastures and water in the dry season increasingly difficult. Despite attempts to settle pastoralists in ‘pastoral villages’ and to make them adhere to calculated carrying capacities, Tanzanian pastoralists such as the Parakuyo Maasai continue to practice a mobile form of livestock keeping in order to maintain their livelihoods. In Tanzania, the government has sought to implement this model since the 1960s through the villagelization program and through the implementation of land tenure and agricultural policies. These policies favor agriculture at the expense of livestock keeping, and lead to the loss of key dry season grazing resources (Benjaminsen *et al.* 2009).

Traditional pastoralism as the most appropriate production system in the harsh environment

Arid ecosystems are characterized by extreme variability in precipitation, and therefore productions are referred to as non- systems (Niamir-Fuller 1998). Non-system emanate from the fact that the natural resources in arid ecosystems/dry lands are normally patchy and unpredictable in nature found in the low productivity environment. Nevertheless, the pastoralists have managed to survive for centuries in such environment due to different strategies which have enabled them to sustain their resource base. Such sustainable pastoral strategies include mobility, diversity and flexibility, reciprocity and reserves (Fernandez-Gimenez and Le Febre 2006; Goldman and Riosmena 2013; Miller *et al.* 2014). Interestingly, pastoralism continues as a production strategy today in the harsh East African environment despite the prediction of the demise of pastoralism by various literature for centuries (Fernandez-Gimenez and Le Febre 2006).

3. Characteristics of Traditional Pastoralist Systems and Grazing Resources in Tanzania

Animal and plants population dynamics in the arid pastoral lands are primarily driven by density independent responses to abiotic factors, specifically climate (McClanahan and Young 1996; Nassef *et al.* 2009). Pastoralists survive the temporally and spatially variable distribution of resources, the threats posed by climatic extremes, and the often unstable economic or political systems by engaging in strategies that increase their options. The common strategies used over centuries include mobility, flexibility, diversity and reciprocity. These adaptive strategies enabled pastoralism system to exist for centuries. Under such strategies, sustainable management practices enable pastoralists to make a living within the constraints of the ecosystem without compromising its productive potential or resilience to stress or disturbance (Fernandez-Gimenez and Le Febre 2006).

Arid ecosystems are characterized by extreme variability in precipitation (Nassef *et al.* 2009). Production are referred to as non- systems (Niamir-Fuller 1998). This is due to the fact that the natural resources in arid ecosystems/dry lands are normally patchy, unpredictable in nature and found in the low productivity environment (Randall 2015; Trench *et al.* 2009). Underlying soil and topographic gradients create a variety of vegetation communities on the landscape, and combined with rainfall variability, the availability of forage varies both spatially and temporally, and in terms of quantity and quality. The resultant patchy nature of forage and water resources on the landscape was the major factor commanding mobility as a traditional coping strategy for pastoralists (Trench *et al.* 2009).

4. Political, Ecological and Environmental Factors that Promote and Constrain Pastoralists

4.1 Lack of Land ownership

It is a fact beyond myth that pastoralists such as the Maasais in Tanzania have used the dry land resources for centuries to carry out mobile pastoralism as their model of production. Interestingly, the lands have the names that reflect their name such as “Maasailand” (Miller *et al.* 2014). Nevertheless, the pastoralists suffer from unreliable water and grazing resources due to lack of proper arrangement to allocate land and give ownership of grazing areas according to traditional or legal procedures.

4.2 Shrinking of pastoral grazing lands

The pastoral lands are frequently changing into crop cultivation, game reserves and the migration of livestock farmers that limit them develop their areas (Sambu 2017: URT 2006a). Since colonial time, and even in recent years, huge chunks of land are expropriated for the exclusive use of wildlife conservation in Tanzania (Ngailo 2013: Sambu 2017: Trench *et al.* 2009). Furthermore, privatization of lands in the pasture lands reduces both mobility and shrinking of grazing resources (Miller *et al.* 2014). Shrinkage of pasture land undermines the drought coping strategies (Goldman and Riosmena 2013: Western and Manzollilo Nightingale 2003).

4.3 Policies and Acts that dilute the traditional pastoralism and promote sedentary

It is succinctly contended by Hesse (2006) that poverty, environmental degradation and conflict that persist in many pastoral areas of Africa is a direct result of inappropriate

policy and interventions. Enduring perceptions of pastoralism as an economically inefficient, and environmentally destructive, land-use systems continue to drive range land and livestock policy. But these perceptions are not evidence-based; they are sustained by ignorance of the dynamics of dry land environments and pastoral livelihood systems, and the absence of an economic valuation framework in which to assess the true contribution of pastoralism to local and national economies. Furthermore, policy design and practice are not sufficiently informed by past failure or designed with the participation of pastoral communities (Hesse 2006). According to Hesse (2006), the governments' poor understanding of pastoralism, combined with the inability of pastoral groups to influence the decisions that affect their lives and to hold government to account, is perpetuating a vicious circle of pastoral poverty and conflict. This is thereby reinforcing the very preconceptions underpinning policy directives for pastoral development in much of East Africa.

4.4 Climate change

Bad weather has recently led to shrinkage of livestock among the Maasais. In 2016, there was a massive death of livestock in Northern Tanzania and Kilosa Districts due to climate stress (Magita and Sangeda 2017). In Arusha region alone, nearly 700,000 livestock were reported decimated by the drought spell since 2010². At least 3,829 livestock died in Parakuyo Village in Kilosa District, Morogoro Region due to drought³. According to Philipsson *et al.* (2017), the climate change is likely to exacerbate those challenges already

² <http://allafrica.com/stories/201005311054.html>

³ <http://allafrica.com/stories/201701030277.html>

experienced by livestock in sub-Saharan Africa, particularly with regard to heat, water scarcity, and unreliable supply of feed. The, nomadic Maasai-pastoralism has suffered the brunt of droughts. The manifestation of these common deleterious effects is likely to intensify as the climate continues to change (Mwangi 2012).

4.5 Low meat quality

Traditional pastoralism has resulted in low quality meat which limits its export to international market. The quality ranges from tenderness, traceability, diseases, hygiene at slaughter houses and violation of animal rights (Njisane and Muchenje 2017). In Tanzania, the animals for slaughter are transported long distances, e.g. from Bukoba or Arusha to Dar es Salaam by Lorries where they do not eat well. In addition, they are stressed and whipped, among others. Such animal treatments lowers meat quality that cannot compete in the meat market, therefore locking the potential to contribute in large extent to the national GDP.

According to Njisane and Muchenje (2017), stress activates the animals' hypothalamic-pituitary-adrenal activity, triggering release of various stress hormones such as catecholamines and cortisol, thus glycogen depletion prior slaughter, elevated ultimate pH and poor muscle-meat conversion. Pre-slaughter stress sometimes results to cattle attaining bruises, resulting to the affected parts of the carcass being trimmed and condemned for human consumption, downgrading of the carcass and thus profit losses.

5. Discussion

Traditional pastoralism supports the livelihoods of millions of Tanzanians involved in the sector such as *Nyama choma* sellers, middle men and hides and leather processors (Allegretti *et al.* 2016). Although some literature (Maziku *et al.* 2017; URT 2016) reported that the traditional pastoralism contribute little to the GDP, other findings by Allegretti *et al.* (2016) argue that the contribution of traditional pastoralism to the national GDP is underestimated. For example, a recent study on economic valuation of pastoral meat production system in Arusha region, Tanzania by Allegretti *et al.* (2016) has shown that the total value of the pastoral value chain with respect to meat only is substantially higher than the value of pastoralism reported in (scant) data in official statistics. Without counting other products such as milk, skins as well as non-use benefits such as those of ecological and cultural nature, the economic valuation of pastoral meat production system in Arusha District and Arusha Municipal Council was estimated to be 46 billion Tsh (29 million USD) per year. This was significantly higher than what was reported as “in land tax revenue” by both local governments, i.e. only about 19,000 USD per year through taxes, levies, rents and other services as contribution of the traditional pastoral system.

The traditional pastoral production system is often (if not always) not accounted for in national statistics (Hesse and MacGregor 2006). Therefore, it is often neglected in natural resource management decisions, which instead favor ranching or other (unsustainable) options that can, in short-term, produce goods to sell in the market. Thus, an explicit (rather than implicit) understanding of the economic contribution of the pastoral production system to the local or national economy is crucial (Allegretti *et al.* 2016).

Despite the fact that economic valuation of pastoral meat production system in Arusha Tanzania showed that the economic contribution of pastoral production is higher than what is reported (Allegretti *et al.* 2016), there is a need to accept a naked truth that the 5-7.4% contribution of traditional pastoralism to GDP is lower compared to other states with fewer cattle than Tanzania such as South Africa and Botswana. Tanzania has 25.8 million herds but with low thriving livestock related industries compared to South Africa (14 million herds) and Botswana (2.5 million herds)⁴. A huge number of livestock herds in Tanzania is a good indicator and proof that Tanzania has a huge potential for meat-processing and other animal products for marketing and strengthening the GDP, only and only if serious investments are made in cattle-processing that produces highly-competitive quality products.

The diverging opinions and perceptions on a type of livestock production that is both productive and environmentally friendly need scientific evidences and historical background. Several scientific researchers have refuted the perception that the traditional pastoralism is unproductive. They have shown that this claim of traditional pastoralism being unproductive is attributed mainly by lack of evidence. Research conducted in the 1980's and 1990's in Ethiopia, Kenya, Botswana and Zimbabwe comparing the productivity of ranching against pastoralism all came to the same conclusion that pastoralism consistently outperforms ranching, and to a quite significant degree. For example, Kenyan Maasai pastoralists cattle produced 185% more kilograms of protein per hectare per year compared to East African ranches in general (Allegretti *et al.* 2016: Western 1982). Similarly, in Botswana, the pastoralists produced 188% more kilograms of

⁴ <http://www.thecitizen.co.tz/oped/1840568-4570902-e4oiavz/index.html>

protein per hectare per year compared to Botswana ranches (Allegretti *et al.* 2016: de Ridder and Wagenaar 1984).

Traditional pastoralism has been practiced in East African dry-lands for centuries and has been commended as the only most appropriate livestock production in the harsh and marginal lands with low-productivity environments where grazing resources are patchy and unpredictable (Fernandez-Gimenez and Le Febre 2006: IIRR 2014). Introducing other livestock production system such as ranching system that respects equilibrium and carrying capacity concepts which only works well in the wet environment many not work well in the dry-lands of Tanzania. The evidence show that most of range land development policies after 1960s that changed sub-Saharan Africa range land management based on the prevailing equilibrium view of range lands failed. Their failure were due to the fact that the equilibrium grazing models were originally developed for wet environments in other non-countries (Oba *et al.* 2000). Grazing programs based on assumptions from equilibrium systems have failed in arid zones in general, and in sub-Saharan Africa in particular, because these assumptions do not apply to plant production patterns and land use in these regions. Grazing exclusion and unplanned water establishment alter traditional land-use patterns and have severe environmental consequences because they induce desertification and create food scarcity for livestock (Dodd 1994: Ellis and Swift 1988: Fryxell and Sinclair 1988: Sinclair and Fryxell 1985).

According to Oba *et al.* (2000), the range lands in East Africa are appropriate for pastoralists' traditional land use. The appropriateness comes from different environmental and management points of view. Dodd (1994) and Ellis and Swift (1988) argue that,

pastoral systems of land use involve a high degree of opportunism to cope with unpredictable rainfall and highly fluctuating forage distribution. Livestock mobility relieves areas of concentration and allows herds to exploit grazing resources that are unevenly distributed in time and space. In addition, a strategy of managing multiple livestock species-sheep, cattle (grazers), goats, and camels (browsers)-allows optimal use of these highly variable grazing resources. It is further contended that pastoral management strategies are aimed at exploiting multiple vegetation states at a landscape level. These approaches to land use are similar to those recommended by non-equilibrium grazing models, such as those incorporating multiple states and thresholds (Friedel 1991), state-and-transition (Westoby *et al.* 1989), and range land health (NRC 1994). An assumption underlying all non-equilibrium models is that plant production dynamics in arid zones are influenced more by rainfall than by grazing. Consequently, these models neglect the important role of herbivory and do not treat herbivory and climate as interacting ecological processes. These models, like equilibrium models, therefore fail to fully capture the processes that occur on arid range lands (Oba *et al.* 2000).

In order to go away from traditional pastoralism in Tanzania which is wrongly termed as “backward” production system (Allegretti *et al.* 2016: Cleaver *et al.* 2013), the National Livestock Policy (2006a) and the Grazing-Land and Animal Feed Resources Act (2010) have been put in place to guide the modernizing the livestock sector. They both promote a commercially oriented, competitive and more efficient livestock industry through further investment in the existing intensive sector (ranching, dairying), and by modernizing the extensive sector dominated by small-holder producers (i.e. the pastoralists). The Livestock policy objective is mainly “to promote commercial production of high quality beef in

intensive and extensive (ranching, pastoral and agro-pastoral) systems” (URT 2006a). The Grazing-Land and Animal Feed Resources Act 2010 envisions modernizing pastoralism by limiting livestock husbandry to specific areas in which forage, water and other inputs are provided, and livestock numbers and movement strictly controlled (Allegretti *et al.* 2016).

If the Grazing-Land and Animal Feed Resources Act 2010 are to be observed to the latter, such that the livestock husbandry is restricted to specific areas in which forage, water and other inputs are provided, and livestock numbers and movement strictly controlled, then it will pose serious threats to the sustainability of the pastoralist system in Tanzania. It will compromise the strategies that have shaped traditional pastoralism in the dry lands for centuries such as reciprocity strategy applicability. Reciprocity has been one of the means of social security in traditional pastoral societies (Fernandez-Gimenez and Le Febre 2006).

Reciprocity which is being compromised by modern policies and Acts that govern livestock production has enabled the East African tribes, notably the Maasai to endure bad weather and shortage of grazing resources. Under reciprocity, the Maasai allow others to graze in one’s territory when drought conditions characterize local territories (Fernandez-Gimenez 2002; Meir and Tsoar 1996), taking in the non-essential family members from an area of drought (McClanahan and Young 1996), or allowing passage through one’s territory. Reciprocity have also its roots in the writing by Mbiti (2015) that “I am because we are; and since we are, therefore I am”. It is also referred to as “Ubuntu” philosophy whereby “a person is a person through other people” (Gade 2012). Ubuntu is a philosophy that promotes the common good of society and includes humanness as an essential element of human growth (Venter 2004). Under the era of climate change, reciprocity strategy is

very important as rainfall temporal and spatial distribution is not equal, and what is more, rainfall is erratic and unreliable. Therefore, mobility for reciprocity is unavoidable if we are to keep the pastoral system sustainable for both livelihoods support and for the sustainability of meat and leather industry in Tanzania.

Unlocking the traditional pastoralism potential for high GDP and industrialization

Survival of the meat and leather processing industries will depend on the survival of the pastoralists and their livestock (Oba 2001). Ranching system promotes herding of a single animal species compared to traditional pastoralism in the harsh climatic and patchy environmental grazing resources. Diversity not only reduce the loss of animals in the harsh periods but also enable better and efficient grazing resources use with less completion as different animal species prefer different grass species with the same area. As Tanzania is making commitment towards industrial lead economy, diversity strategy is crucial among the pastoralists; i) Ability to make maximum use of diverse resources both in the vertical and horizontal dimensions in the terrain by diverse species of animals, and hence more animals available as raw materials for industries, ii) when environment becomes harsh (drought), there is possibility for sustainable supply of animals for slaughter such as goats and sheep that are drought tolerant than cattle.

By maintaining a diversity of animal species and states within species, pastoralists have the flexibility to slaughter or sell stock according to their physiological state, environmental and market conditions, and the needs of the herders. But pastoralists should be encouraged to sell their weak animals and young males before the dry season in arid areas so as to minimize animal losses during the stressful period (Amanor 1995). This flexibility will be

fruitful as long there are meat processing industries that will enable harvest animals in a more profitable way, that is, slaughtered animals are processed into canned beef or exported meat instead of waiting for animals to die as has been a case of Tanzania in recent years. Mobile pastoralism in the arid pasture lands of Tanzania which are non- system in nature, need to have ability to react quickly in order to take advantage of the changing situations before the loss is encounter (Lane and Moorehead 1994). It is argued that the extent to which people are able to adapt depends on the flexibility of institutions, at all levels from those of governments to individual households (Squires and Sidahmed 1997).

The death of animals in the pasture lands not only lead to economic loss to pastoral households; but also loss of raw materials for Tanzania industries namely meat processing and leather industries. Therefore, there is a two way economic benefits between Tanzania industries and pastoralist societies resulting from promoting the flexibility strategy among the pastoralists in the arid pasture lands.

This paper acknowledge the existence of occasional pastoral resources conflicts in Tanzania (Benjaminsen *et al.* 2009; Cleaver *et al.* 2013). These conflicts are one among the factors that constrain the sustainability of pastoralism production system that may hamper the smooth livestock production and ultimately unreliability in the supply of animals to the meat industries. Therefore, different means to govern the peaceful sharing of pastoral grazing resources must be devised. Good resource use practices or models such as those already used in trans-boundary resources.

Other measures approaches to unlock the traditional pastoralism potential for high GDP and industrialization of the economy include reinstating cheap or free veterinary services

and making pastoralists resilient to climate change impacts through excavating dams for watering livestock (Benjaminsen *et al.* 2009), ensure traceability of animals, phytosanitary issues and mishandling of animals on transportation (Njisane and Muchenje 2017) and increase meat quality through reducing animal stress by constructing slaughter houses and meat processing industries in the cattle rich Districts. Further, the pastoralist grazing land rights should be recognized as well as their legal migration routes as is the case of wildlife corridors and reservoirs of biodiversity (Fernandez-Gimenez and Le Febre 2006).

Synergies between pastoralists' production and Tanzania meat and leather processing should be established and institutionalized. Already Oba *et al.* (2003) had put in place some means at which the pastoralists could benefit from selling their livestock to the meat canning industries during the time of drought, taking a case of Kenya. This could work if there is an established contingency program where the pastoralists may save cash from sales of livestock and use the savings for restocking during the recovery phase.

5. Conclusion and Recommendations

The contribution of traditional pastoralism livestock production in the Tanzania economy and support of livelihoods of millions of Tanzanians is well appreciated in a number of research reports, media, government plans and policies. The contribution of traditional pastoralism to Tanzania GDP of 5-7.4% is lower compared to the number of livestock available in Tanzania. Major improvements and investments are required to unlock the traditional pastoralism potential to contribute to high GDP.

Probably the negative perception on traditional pastoralism in the mind of non-pastoralist, conservationist is the most important limitation to traditional pastoralism to contribute

highly to livestock GDP. They lack appreciations of its contribution and hence reluctant to improve it. They blindly advocate for sedentary ranching system historically failed in dry-lands of Africa because of it being suitable for wet regions. Planners, policy makers and all livestock stakeholders should make decisions about the right livestock production appropriate for Tanzanian environment based on available scientific facts. In addition, there is a need to change planners and policy makers negative perception on traditional pastoralism to allow the investments on it so as to improve its productivity

Perhaps the implementation of any anti-mobile pastoralism policies or Acts and encourage ranching system will have a significant negative impacts on the country's dream towards industrialized economy.

There is a great possibility to harness the potential of huge livestock in Tanzania as in other sub-Saharan Africa countries and raise of livestock GDP. But attention must be paid on the limiting factors such as attitudes, climate change impacts and improve meat quality.

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