

Examining Drivers and Indicators of the Recent Changes among Pastoral Communities of Butana Locality, Gedarif State, Sudan

Yasin Abdalla Eltayeb Elhadary^{1,2}

¹Faculty of Geographical and Environmental Sciences, University of Khartoum-Sudan

²Staff at Department of Geography, University of Imam Mohammed Ibn Saoud, Saudi Arabia

Abstract This paper focuses predominately on the major changes occurred among pastoral communities in Butana locality of the Gedarif state in Sudan. It examines the driving forces of these changes that have taken place during the last five decades. A questionnaire was conducted involving three hundred respondents that were randomly chosen from nineteen villages living in Butana locality. The paper has come out with that changes is a part of human nature, but in the case of pastoralism it is faster than one expected and always come through internal and external forces beyond their limit. Invasion of crop farming, shrinking of grazing land, spontaneous settlement, conflict over resources, and changing in the role of woman are some the major changes. Results show that privatization of communal land, economic marginalization, lack in infrastructure and international intervention are perceived to be the major drivers behind such changes. The paper confirms that climatic variability is the part nature of semi arid land and has not to be fully blamed behind the current changes. The ability of pastoral economy to survive until today is challenging the notion which circulated among planners and decision makers that pastoralism is backward production system. Despite the huge constraints they are facing, still the contribution of pastoralism to the economy of Gedarif state as well as for the country is highly considered.

Keywords Adaptation, Changes, Mobility, Pastoralism, Marginalization, Sudan

1. Introduction

Pastoralism as way of life and source of identity is one of an ancient activity being practiced and survived until today. It dates back to 10,000 years BP as in some regions of Europe (McCracken & Huband, 2005). Archeological evidences have shown that cattle appeared in Africa about 5900 B.C. at a site around Chad (Ryan et al., 2009). Other studies used (DNA) analysis suggested that cattle domesticated around 6500 or even 9000 (Ajmone-Marsan et al., 2010). Since then pastoralists worldwide have developed several strategies to adapt to the ecological and socio-political stresses specifically in the drylands environment. Their strategies include, but limited to mobility, animal diversification, flexible stocking size and sound herd management (Elhadary, 2010). Several scholars indicated that mobility is a key adaptation in African pastoral systems (Ellis & Swift 1988; Niamir-Fuller, 1999) and that limitations on it often have disastrous consequences (Mortiz et al., 2013a). Even in Asia, nomadic pastoralism has thrived

for several millennia by tracking seasonal changes in forage productivity and coping with a harsh climate (Singh et al., 2013). Astonishingly, even in Europe where climate is suitable, transhumance has been a major adaptive practice in Mediterranean pastoralist systems particularly in a country like Spain (Oteros-Rozas et al., 2013). Mobility is not just a kind of movement, several issues need to be settled to ensure its efficiency and success. Major among these is adoption of communal land tenure system. This implies that control and access of land resources are governed by communities' under customary rules. This system has long history not only in Africa (Elhadary, 2007; 2010) but also in the Middle East (once upon a time) and even in North America (Payne, 2000). According to Dong et al. (2011) the Great Plains in USA, have historically been open range, hosting pastoralism operations where anyone was theoretically free to graze livestock.

The economic importance of pastoralism worldwide and its vital contribution to the Gross Domestic Product GDP is quite clear and adequately documented. It has been estimated that about 26 million km² of land worldwide are under managed-grazing systems, and estimates about "120 million pastoralists/agro-pastoralists worldwide," 50 million of which are in sub-Saharan Africa, 31 million in West Asia and North Africa, 25 million in Central Asia, 10 million in

* Corresponding author:

yasingeographya@yahoo.com (Yasin Abdalla Eltayeb Elhadary)

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South Asia and 5 million in Central and South America (Krätli et al., 2013). In Mediterranean Europe for example, pastoralism has played a key role in shaping landscapes of High Nature Value, especially in mountainous ecosystems and rural areas (Oteros-Rozas et al., 2013). Despite its vital contribution, still some governments regarded pastoralism as 'backward', economically inefficient and environmentally destructive, leading to policies that have served to marginalize and undermine pastoralist systems (Chinogwenya & Hobson, 2009). In Africa, pastoral systems secure livelihood for the overwhelming majority of its entire population. In Sudan, for example, 90% of the national herd are in pastoral systems, the 2009 off take was worth US\$1.8 billion, about 98% of which supplied the domestic market (Behnke & Osman, 2011). Pastoralism is practiced across nearly all the states of Sudan: anywhere between 40-60% of the population is engaged in the rearing of cattle, sheep, goats and camels (Heathcote, 2013). Moreover, livestock managed through nomadic and semi-nomadic pastoral systems contributes by 25% of national GDP and provides 20% of the hard currency and 40% of the total nutritional (Elsadig et al., 2013). After neighboring Ethiopia, Sudan possess the second largest number of livestock in Africa (UNEP, 2007). Besides, its contribution to the economy, pastoralism, through free mobility, plays a role in conserving the environment (Elhadry, 2010).

Currently, over the course of the last five decades, Pastoralism and pastoralists' lifestyle worldwide has witnessed severe transformation and changes than ever before. Reductions in mobility, sedentarization of nomadic pastoralists, and conflicts with wildlife sharing similar resources are commonly observed of such changes in Asia (Singh et al., 2013). Even in Europe, over the past 30 years the total area for high nature value pastoralism has declined, and such areas are now primarily found in mountainous and remote regions (McCracken & Huband, 2005). In the Africa however, the adaptability of pastoralism, which depends on water availability and pastureland productivity, is now being negatively impacted (Dong et al., 2011). Several factors include both physical and human aspects have been accused behind the decline of pastoral system. Restrictions imposed on mobility, poor investment in social services and infrastructure (Chinogwenya & Hobson, 2009) socio-political circumstances (Singh et al., 2013) population growth, loss of pastureland to private farms, periodic dislocations brought about by drought, and civil war are collectively threatening pastoralism that has proved in the past to be a highly adaptive food production system (Fratkin & Mearns, 2003). These factors are summarized by Dong et al. (2011) who study pastoralism in various countries like Central Asia and Mongolia, Bolivian and Peruvian Andean of South America, European Alps, and highlands and Queensland, Australia. Their findings showed that socioeconomic factors, such as changes in land tenure, agriculture policy, and human and livestock population sizes, disrupting pastoral institutions moving them toward marginalization, are the major driving forces behind the

current changes.

Although the driving forces vary widely from region to region, but all share in common that climatic variability and socio-economic stresses are the main drivers behind the current changes. This paper not rejecting the role of natural factors in driving fragile pastoral ecosystems into more vulnerable conditions, but put much weight to the socioeconomic factors, specifically the changes in land tenure, unorganized horizontal expansion of crop farming and lacks in accessing basic services. It believes on that drought which is the part nature of semi arid lands can be managed and its effect can be minimized. Moreover, pastoralists have developed several strategies to adapt and cope with it through herd management and flexible mobility. This paper focuses on the current changes that have taken place on pastoralism of Butana at the eastern Sudan. The objective is to provide an empirical evidences in showing that socio-political marginalization towards pastoralism in Sudan is a key driver behind the collapse of pastoral system rather than just blaming natural factor. The paper tries to answer the following questions? How pastoralists adapt to the scarcity of nature in semi arid of Sudan? What are the real driver behind the recent changes of pastoral system in Sudan? What are the major indicators of the current transformation of pastoralism? By answering these questions, the study will contribute to the knowledge and debate on the current issues on pastoralism thus, helping planners and decision-making in formulating sound policy that might be useful for sustainable development.

2. The Study Area

The focus of this article is on Gedarif state in the eastern Sudan specifically Butana locality (Figure 1). Internally Gedarif is bordered by four states, namely Kassala state to the north, Nahr Elnil state to the northwest, Gezira state to the west and Sennar state to the south. Butana, the study area, is one of seven localities that all combined forming Gedarif state. These are Fashaga, Faw, Gallabbat East, Gallabbat West, Gedarif, Rahad and Butana locality (*Mahalyat El Butana*). Geographically, Butana is located between latitude (13 N up to 16 N) and longitude (34 E to 37E) within an area of 34000 km², with 48 villages and 4 parties (*Hai*). Ecologically, Butana is lies within semi arid region where annual rainfall ranges between 75 in the far north to 400 mm in the south (Elhadary, 2007). It is a part of African Sahel, a major pastoral production zone in Africa for centuries (Dong et al., 2011). In 2008, the total population of Gedarif has reached 1 348 378 inhabitants with 78000 in Butana (CBS, 2010), being composed of people belonging to several ethnic groups including Arabs and non- Arabs background. This ethnicity has its role in accessing land and shaping the demography of Gedarif state. Thus, Shukriya (Arab tribe) and its affiliation has occupied the northern part (Butana) while non-Arab from western Sudan and West African countries dominated the southern

part of the state.

3. Methods and Data Collection

To fulfill the paper objective and answering research's questions, data were collected based on interviews with the key informants (tribal leaders, elders people, etc), group discussion and questionnaires. The area under study has been visited formally three times catching different seasons. The researcher randomly selected and interviewed 300 household living in 19 villages distributed in five geographical sectors (North, south, east, west and centre) at Butana locality, Gedarif state (Figure 1). The fundamental questions are centered around the changes that have taken place specifically before and after the adoption of the Land Act in 1970. Moreover, in each sector the researcher asked elders people to recall the history of pastoralism in the area, introduction of mechanized farming, traditional rangeland

regulation and changes that have recently witnessed. In addition, the researcher also managed to discuss the issue of land policies with the five *Nazirs* (*Nazir*: tribal leader). There are five *Nazaras* (an area and people under Nazir control and management) in Gedarif sate. These are *nazara* of shukriya (Butana), *nazara* of Dubbanya (wad Zied), *Nazara* of Wad Bakur, *Nazara* of Al amir Yagoub (Gala elNahal), and the deputy of *Nazara* of Beni Amir. The fieldwork data have been supported by secondary resources especially the articles that have been published recently on issues related to changes in pastoral communities. This secondary data enhanced our empirical findings and helped to put the article in a regional and international context. Statistical package for social research SPSS version 17 has been used widely in manipulating and analyzing data. Maps used in this study were achieved through the use of Global Positioning system GPS and Geographic Information System software particularly Arcgis 9.3.

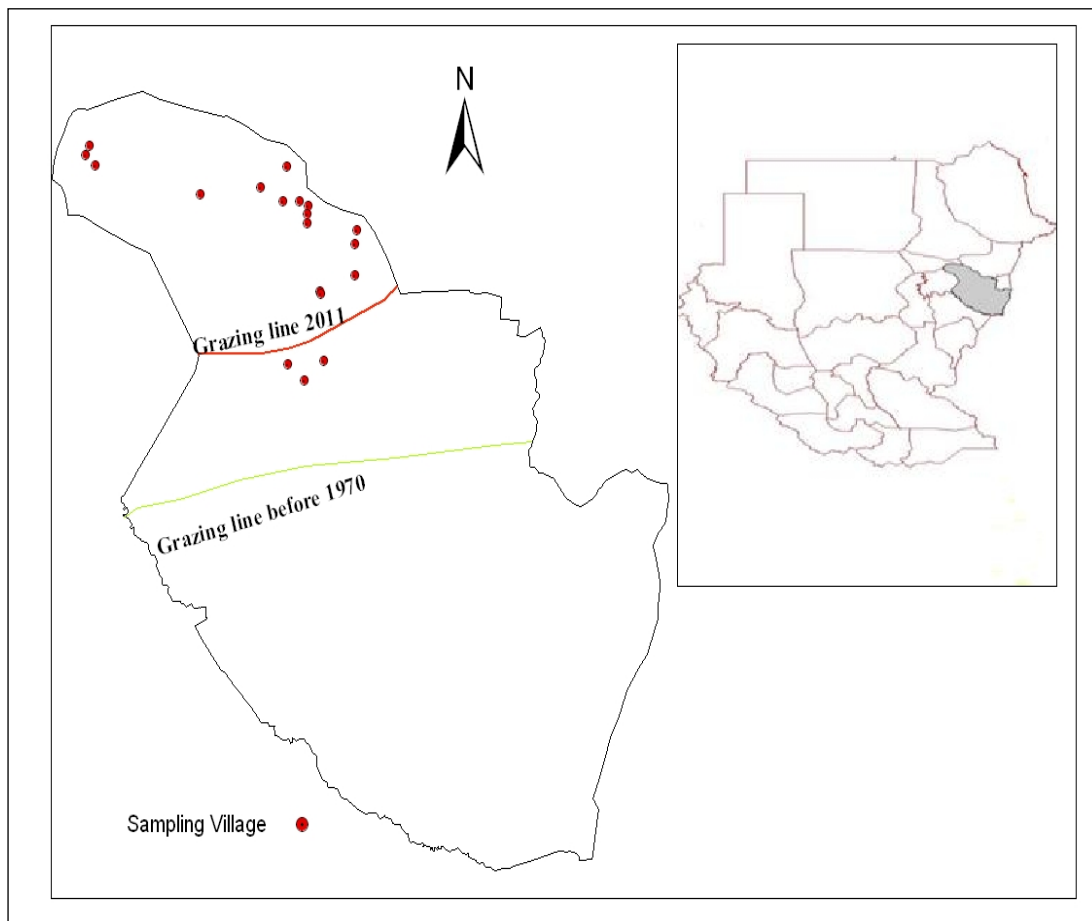


Figure 1. The Location of Butana, Gedarif State, Sudan

Conceptual and analytical framework

There is a long debate and confusion about the concept of pastoralism. To tackle this problem the study adopted several definitions. Pastoralism has been defined as “those people in which 50% or more of the household revenue comes from livestock or livestock related activities or where more than 15% of household’s food energy consumption consist of milk and milk products (Swift 1988). According to Abusin (1993) pastoralists is the mode of life and production system of self oriented strategy of mobility, in time and space, and socio-economic network to maximize utility from meagre and patchily distributed resources by inter-changeable emphasis between livestock keeping and agriculture. Moreover, he divided pastoral production into three groups: group one is pastoralists where 75% of their living depends on livestock under extensive spatial mobility, group two agro-pastoralists where 50-75% of their living depends on livestock and Group three is farmers where less than 50% of their living depends on livestock. In the purpose of this paper, pastoralism representing the people that have permanent settlement and spent part of their time in other places searching for better grazing areas. Those people besides raising some animals they do have some cultivation but in a low scale.

To address the recent changes on pastoralism and its indicators, this paper develops an analytical perspective (Figure 2); a useful technique in guiding the analysis and discussion. Generally, the frame is divided into three sections. Section one is in the lower part of the frame has showed the strategies adopted by pastoralists to secure their livelihood in the semi arid lands of Sudan. Section two is in the middle part of the frame explaining the real factors behind the current transformation. It says clearly that pastoralists are victims of internal and external structured marginalization. This marginalization should be held responsible behind the current transformation that have taken place in Butana area. Informed by negative preconceptions about pastoralism (economically inefficient and environmentally destructive), large-scale assistance was provided by the World Bank and bilateral agencies, usually of highly capitalized infrastructural planned by outside technical experts for implementation by national government officers (Fratkin & Mearns, 2003). Modernization, anti nomads, privatization of communal land and sedentarization were irrelevant policies adopted by planners under the slogan of "development". These policies caused land tenure insecurity and created conditions for open access thus brings ruin to all as Hardin believed in his perspective (Elhadary, 2010). As a result, pastoralists worldwide were forced into the remaining atrophied common grazing areas, with shrinking resource base (Niboye, 2010). Elhadary and Samat (2012) mentioned that the double standard and unfair policy adopted by the state in favor of cash crops and neglecting pastoral economy has created socio-economic disparity between people and declined pastoral mobility.

Section three is in the upper part of the frame reflects some socio-economic and ecological indicators of the current changes. Change to other means of livelihoods like farming in marginal lands, wage labour and out migration (Lane, 1998) environmental degradation are some of the consequences of the recent changes. These pressures combined with the decline of local institutions for settling conflicts and disputes, violence frequently results and has led to the crisis of pastoral livelihoods (Oxfam, 2014). This situation challenges practitioners to sustain and protect mobile pastoralism worldwide in recognition of its social, cultural, economic, and ecological assets (Oteros-Rozas et al., 2013).

Drivers of pastoral changes

This paper confirms that the recent changes of pastoralism are due largely to socio- political and economic factors and escalating by the condition of climatic variability. It is not drought as such that makes pastoralists vulnerable, but the growing inability of pastoralists to practice their efficient strategies mainly the free mobility to cope with it. This idea supported by Dong et al. (2011) who state that although the famines of the years 1984 and 1990 across the Sahel were undoubtedly triggered by the prolonged drought, they were significantly exacerbated by inappropriate development practices. The following section examines the major drivers behind the current changes that have taken place in pastoral communities of Butana locality.

Political marginalization manifested itself in the privatization of communal land without consulting the real "owners" (pastoralists). Several acts have been introduced in pastoral areas worldwide to facilitate land grabbing. For example, the Homestead Act of 1862 and Dominion Lands Act of 1871 implemented in USA to allow for the settlement and agricultural development of the Great Plains (Bower, 2007), has driven the pastoralism on the Great Plains into further marginalized and degraded conditions (Wood, 1998). Also in Latin America (Bolivia and Peru) the implantation of agricultural reform policies aimed at "modernizing" pastoralists have failed to understand and appreciate the fundamentals of pastoralism, thereby exacerbating the deterioration of environmental, economic, and social conditions in pastoral communities throughout the region (Nori, 2007). Even in Europe, pastoralism has been marginalized by regional development strategies. For example, the adoption of industrial development and ski-based tourism above or near timberline (Brugger et al., 1984; Lasanta et al., 2007) have modified land management practices, reducing pastoralism in these areas by making it less necessary or economically unviable (Dong et al., 2011). The situation is not much better in Asia, particularly where highly inequitable patterns of control over land and other key resources in export-driven economies have forced pastoralists to relocate to less productive regions or give way to urban and industrial growth (Fratkin & Mearns, 2003).

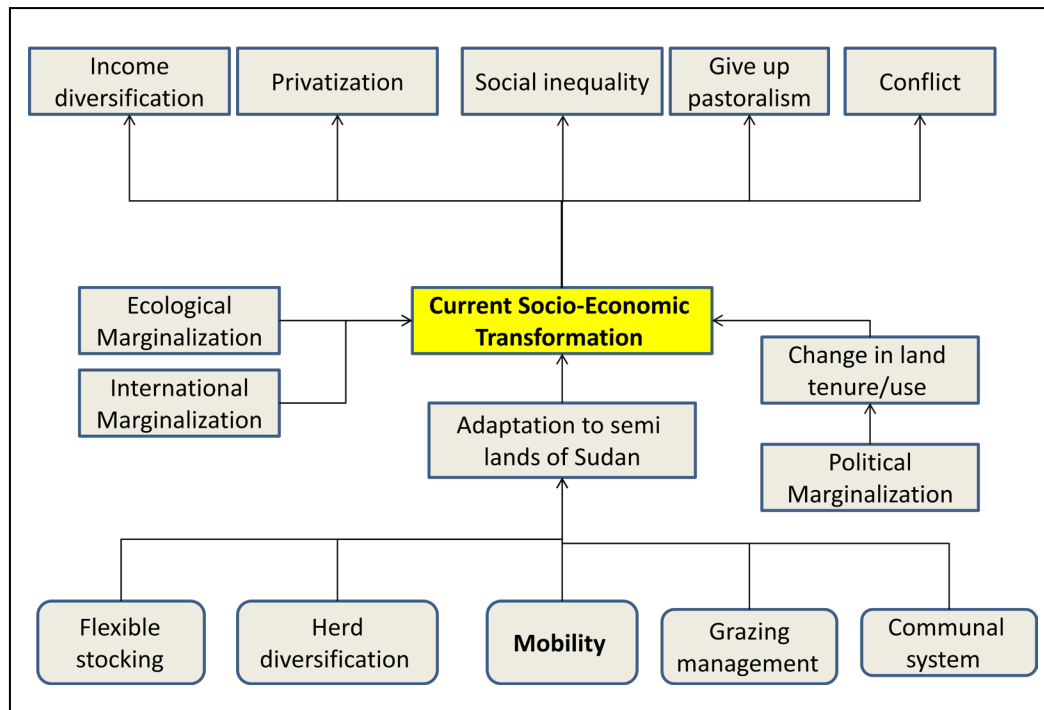


Figure 2. Analytical Framework

Political and Ecological Marginalization

In the case of Africa the situation of political marginalization towards pastoralism even worse, the northward expansion of agriculture into historically marginal areas, has degraded the grazing resources and speed up conflicts over land resources (Glantz, 1996). African planners were not learning from the past and recently most of the African countries including Sudan have embarked on the conversion of communal land into commodity markets without considering the traditional right of pastoralists. Taken land from pastoral cooperatives and vested to wealthy individuals and groups, resulting in their growing insecurity over access to resources and the ability to exercise various mobile grazing options (Dong et al., 2011). In Butana as well as in several pastoral areas of Sudan, huge land belong "orally" to pastoralists were taken and vested to investors to grow cash crops under both irrigated and rainfed mechanized schemes (Elhadary, 2007; 2010). Under the guise of compulsory acquisition in the public interest with the rhetoric of providing national development, some agents of the state grab land from ordinary people and, in turn, give land to powerful interest groups such as investors, the rich, and cronies of governments (Elhadary & Obeng-Odoom, 2012).

Historically, in Sudan, access to land particularly in rural areas including Butana were governed by the communal system under customary rules. In this system each member as well as outsider has the right to access and use the land in condition that not violating the traditional rules. These arrangements allowed for the exchange of production inputs (manure for fertilizer, crop residues for animal feed), and permitted the different ethnic groups to coexist peacefully to

their mutual advantage (Oxfam, 2014). This system has continued up to the 1970s when a new land act has been introduced in the country. The year 1970 has witnessed the birth of unregistered land Act. This act states that all occupied or unoccupied land (forest, waste and pastoral land) which has not registered before has become a state's property and thus free and access by all without any restrictions (Elhadary, 2007; 2010). Consequently, Butana area has been converted into "open grazing land" available and accessed by all users without any limitations of utilization. This act has given way to exclusive land use right created competition, and is responsible for the current conflict over land resources in most parts of Sudan (Oxfam, 2014). Although more than forty year has passed since it has been implemented, still some people believed on the communal system and that land use and access is governed by the tribal system. This dichotomy in land tenure has generated disputes and in some cases lead to bloodshed as in Butana (Elhadry, 2007) and to armed conflict like that in Darfur since 2003 (Elhadary and Samat, 2011; Oxfam, 2014).

The introduction of land act 1970 was followed by abolition of the local administration system, a body responsible for organizing access to and use of land in many rural areas. This action has eroded the legitimacy of traditional decision making (Niboye, 2010) and pastoralists lost its legal basis to protect their right. As indicated by Komey (2009) the abolition was taken by the government to ensure the suppression of community or individual that might resist the process of land grabbing and to disable their efforts. Recently the amendments to the 1984 Civil Transactions Act (1990, 1991, 1993), brought by the current regime, not only confirm State ownership over unregistered

lands, but more importantly remove any chance of legal redress against the state. It says no court is competent to deal with any suit, claim or procedures on land ownership against the Government or any registered owner of investment land allocated to him (De Waal & Ajawin, 2002; Ayoub, 2006). This sent wrong signal by saying that power people, government affiliation or investors are beyond the law.

Accordingly, Gedarif state has witnessed rapid expansion of mechanized rainfed and irrigated farming at the expense of pastoral land. Recently, the total area under cultivation in Gedarif state has reached eight millions feddan comparing to 21000 feddan in 1945 (Eltayeb et al., 1983). This expansion, has put more pressure on pastoral mobility and pushed pastoralists to the area that of low productivity leading to what is known as "ecological marginalization". It is important to note that mechanized farming has extended even beyond the grazing line in Butana area. An official line separates agricultural area from rangeland, as the northern part (arid and semi land) of Gedarif is reserved for grazing while agriculture is allowed in the southern part (humid). Astonishingly, nobody held responsible for this illegal shift, but some rumors blamed and accused the lobby of the big farmers in Gedarif (Elhadary, 2010). This invasion of mechanized agriculture into ecologically marginalized areas means two things: the power of big farmers (state inside state) in violating environmental laws, or no land left in the south for further horizontal expansion (Suliman and Abdel Ghaffar, 2013). This paper is in line with (Mortiz et al., 2013a) who state that one of the major threats to the common-pool grazing resources does not come from the pastoral system of open access, but from agricultural expansion onto seasonal grazing lands and the transhumance corridors connecting them. And with Dong et al. (2011) as he stated that "Over-extension of agriculture into historically marginal rangeland areas, resulted in massive losses of human life and livestock, the destruction of communities and livelihood systems, and massive societal disruption on a regional scale.

Although, the introduction of both mechanized and irrigated schemes were in pastoral land, pastoralists have never been in consultant and in very few cases get fair compensation. Moreover, the old system where schemes were open freely for pastoralists to graze after harvesting is completely changed. Today very few pastoralists can access residues but after paying for that. In most cases farmers use the residues for feeding their owned livestock. Not only mechanized farming that shrinking mobility, but also the establishment of irrigated schemes have its impact on pastoralism. Two big irrigated schemes have been introduced in pastoral area these are Rahad and New Halfa scheme. New Halfa was established in Butana area in 1960s on an area of half million feddans. This scheme has cut out large areas of grazing land and blocking mobility to the permanent water resources of river Atbara during the dry season. Rahad Scheme was inaugurated in 1977 of an area of one million feddans, again at the expense of the richest pasture in Gedarif state.

Economical Marginalization (Market Economy)

The expansion of crop farming at the expense of pastoral lands discussed above has been grieved by the role of what the paper use to call it "market economy". Pastoralists worldwide and in Sudan in particular have been negatively affected by the operation of the markets and trade relation; predominantly after the adoption of price liberalization policy in the early 1990s. Decline in mobility due to the unorganized expansion of agriculture has led many pastoralists to enter the market heavily. Pastoralists are in need for buying crop residue, basic needs (food, building materials, gases or other goods) and selling part of their animals to pay the rented herders especially in the collapse of the extended family and collective work. This has proven that pastoralists become more dependent on the market, which is usually stand against their will, rather than ever before. The survey has shown that lack of market infrastructure, difficult in accessibility, absence of marketing information, lack of support and protection from the state are some challenges that faced pastoralists. In the past, pastoralists have adapted themselves to the dry condition by free access to crop residues during summer seasons. Today residue has become a market commodity.

It has been observed that there is no single asphalt road allover Butana locality and the area become inaccessible particularly during rainy season. This condition forced pastoralists to walk a longer distance, at least seventy kilometer to access the nearest local market of Gedarif Town (Figure 3).

Moreover, pastoralists are need to pay around 500 to 1000 Sudanese Dinnars (SD) per head (sheep) for transporting animals to the closing market. The variation in this cost of transportation is related to the difference in distances and seasonality (dry and wet). The transportation costs during the wet season is bit higher depending to the condition of roads. As a result, pastoralists were forced to sell their animals in their villages to the local buyers and traders in low price than shouldering the risk of transporting and get fair price. For example, the price of mature sheep in the village is around 12000-1400 SD while, in Gedarif market is between 20000-25000SD. Moreover, and due to the long distance (70 to more than 150 km (Figure3) and means of transportation (Lorries), usually around 2-5 sheep per/car get lost on the way to the markets and this number will double itself when a lorry carries more than its capacity. Lack of proper information about marketing is another challenge that faced pastoralists in marketing their products. Therefore, when pastoralists reached the markets they have no option than to sell their animals even when the offered price is lesser than they expected or have it in their villages.

Although Gedarif state is famous as a land of mechanized farming, this sector contributes little to the GDP compared to the livestock sector. Despite its lower input facilities compared to agriculture, livestock contributes around 90% of the GDP in Gedarif state (Table 1). And the number of animals is always increasing as it reached around six million in 2010 (Table 2).

Table 1. The Contribution of the Traditional Sector to (GDP) in Gedarif State

Sector	2006	2007	2008	2009	2010
Irrigated Agriculture	1.8	1.9	1.7	1.1	1.4
Rain fed agriculture	9.8	7.9	10.07	6.9	9.9
Livestock	88.4	90.08	88.2	91.8	88.6
Forest	0.07	0.07	0.08	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0

Source: Gedarif Encyclopedia, 2013

Table 2. Number of livestock (000) in Gedarif state

Animal	2006	2007	2008	2009	2010
Cattle	1170	1222	1276	1333	1392
Sheep	2711	2884	3067	3261	3468
Goats	830	840	851	862	873
Camel	546	552	559	566	573
Total	5227	5498	5753	6022	6306

Source: Gedarif Encyclopedia, 2013

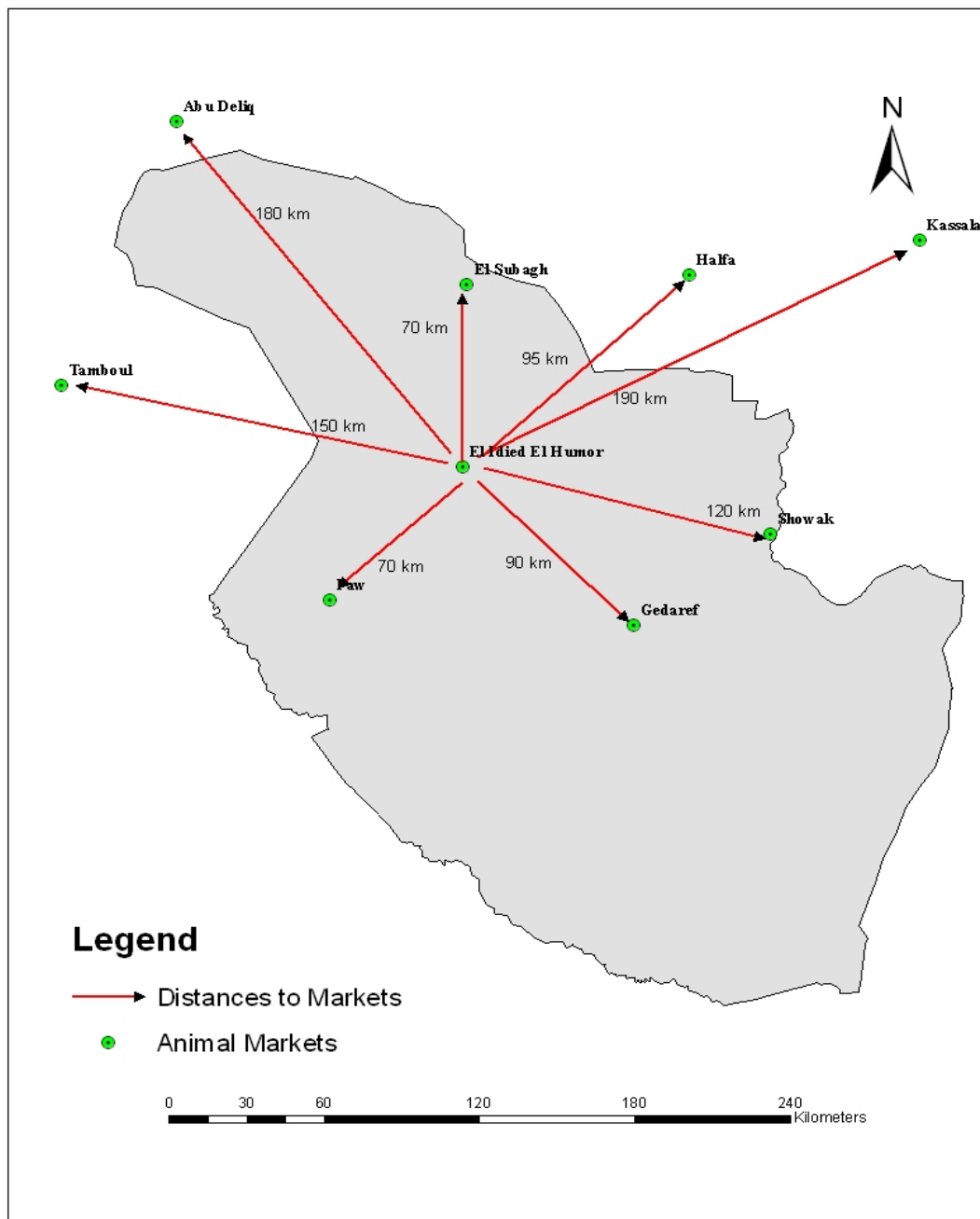


Figure 3. Current Market Places in Butana Area

It is worth mentioning that there are different kinds in collecting money from pastoralists: through Islamic Animal *Zakat* (generally one for each forty heads), animal tax (grazing tax) and marketing fees. When livestock are sold by primary producers and enter the commodity chain, twenty or more taxes and fees may be levied before they reach terminal markets in Khartoum (Bahri, 2007). It so sad to note that in some cases pastoralist need to pay double grazing tax in the same year (Table 3). This usually happens when pastoralist crossing two neighboring states especially for those coming to Butana in rainy seasons, each state demanding its grazing tax. What will happen if a pastoralist is not in a position to pay animal tax? In each team there are a number of police their responsibility is to protect tax collectors and take some animals in case of not paying in cash. The taken animal is always exceeding the amount of tax needed. They will not return the animals unless tax been paid if not for at least ten days the animal will become a government's property. Their logic of having more animals is to charge for the services provided to the "stolen" animals during those ten days. So after selling they will take the animal tax and deduct the cost of the ten days then the rest (orally) went to the herders. Also in the case of giving wrong information about livestock number or types the penalty will be double tax followed by jailed for one month. If you are escaping from paying, the punishment will be triple tax with at least three months in prison. It was observed that the tax department is highly equipped with new and advanced cars that have ability to work even in muddy condition. The collected tax is an important source of revenue for local governments.

Table 3. The Rate of Animal Tax in SD in Gedarif State

Number	Type of animal	Tax (Gedarif State)	Taxes (other States)
1	camel	600	300
2	cattle	400	200
3	Sheep and goats	175	100

Source: Tax department, Gedarif state, 2007

The survey has shown that there are eight sectors benefiting from the collected animal tax (Table:4). The departement of Animal tax which is responsible for collecting this tax gets 25% from the total and then send the rest to the ministry of finance to distribute it according to the sectors mentioned in table 4. It important to note that only 12 % of the collected tax return to livestock sector and the rest used by local government.

Despite its positive contribution to the local economy, pastoralists get less when it comes to the funding process. It appears that farmer or say big farmers can access credit from banks or say different banks in condition that they are Sudanese and have lands although large number get difficulties in repaying the fund. In the side of pastoralists although they are Sudanese and have land and even has a bank carrying its names (Animal Resource Bank) they get nothings in term of funding support. This is due to the fact

that they have no "official" documents to claim their lands and use it as collateral to be approved by the bank. In addition to the lack of credit institutions, pastoralists even lack knowledge about the procedures to obtain credit, although its contribution to the national economy is sufficient and clear.

Table 4. Percentage Distribution of Animal Tax According to the Different Sectors in Gedarif State

Number	Sector	Per cent
1	Localities (mahalliyat)	65
2	State Headquarter	5
3	Public corporation for water	10
4	Livestock' union	5
5	Jihad share	3
6	Nomad education	2
7	Students hostiles	5
8	Department of rangeland and pasture	5

Source: Animal tax administration 2007

Social Marginalization

Pastoralists despite its considerable contribution to the economy of the state, have received less in terms of the provision of basic services. Regarding health, the researcher has observed that there is no even a single hospital all over Butana locality despite it has been inhabited by 78000 people, except small clinic at El Subagh centre less equipped and lack of specialised staff. Moreover, due to the lack of asphalt and good roads, people in Butana get difficulties in accessing hospital in their surrounding towns (Gedarif, Kassala, Halfa and Medani) that enjoy and access all facilities of public and private health services see Figure 4. Sick people might die on the way to these health centers (long distance) especially those who bite with *Scorpion* and Snacks a common phenomena in Butana area.

The condition of education is not better than the provision of health service. Marginalization policy towards education among pastoralists in the study area is an old phenomenon. The survey has shown that around (43 %) of the total population are illiterate with very few that hold university degrees (5%) (Figure 5).

It is important to note that only primary education is available in Butana area and he/she needs to continue should go to urban centre (see Figure 3). Travelling longer distance alone, paying school fees, and living without parents put huge constraints in accessing education especially for girls. To have an in depth details, the paper uses El idied El Saminah School as an example. This school was established in 1992 and have a number of pupils see (table 5). It important to highlight that Sudan is the only country all over the world that has two stages before university education. The basic education of eight years and high secondary school for three years. Regarding basic education, table 5 highlighted several points major among this is that less

number of pupil accessed basic education with sharp decrease when it comes to girls. Another point is that not all the pupils continue their study till class eight meaning there is a high rate of dropouts (*Tasarooob*). Several factors should be put in place to understand why pupils left school early. This is due to the fact that children play vital role in

shouldering the responsibility of fetching water, participating in herd management, early marriage, sensitivity towards education especially for girls, absent of secondary education in Butana in addition, to that parents are not enthusiastic for educating girls.

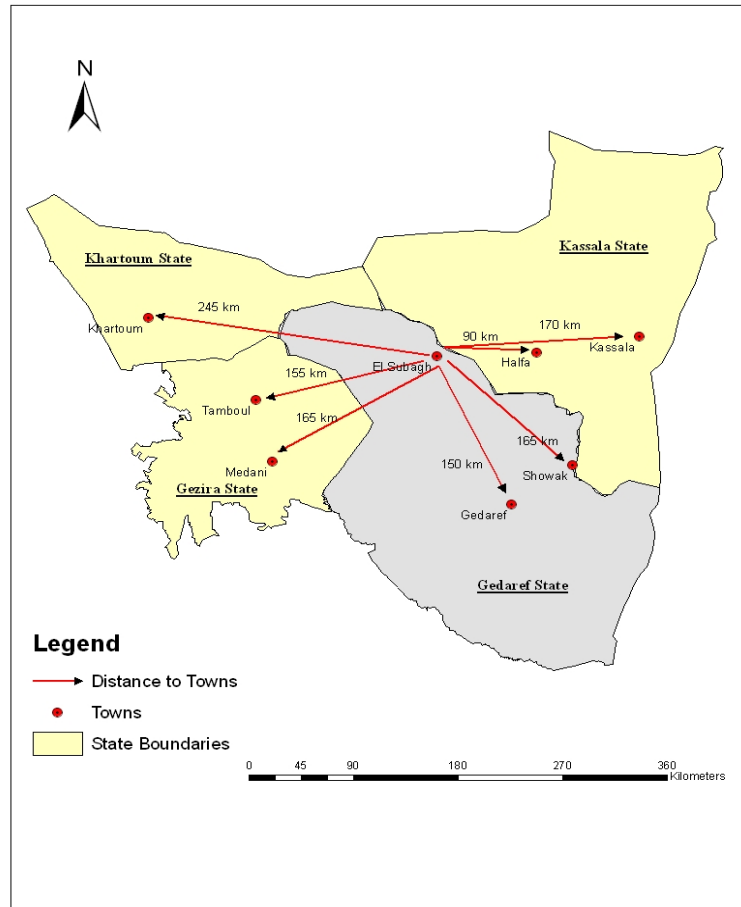


Figure 4. Location of Urban Centres in Butana Area

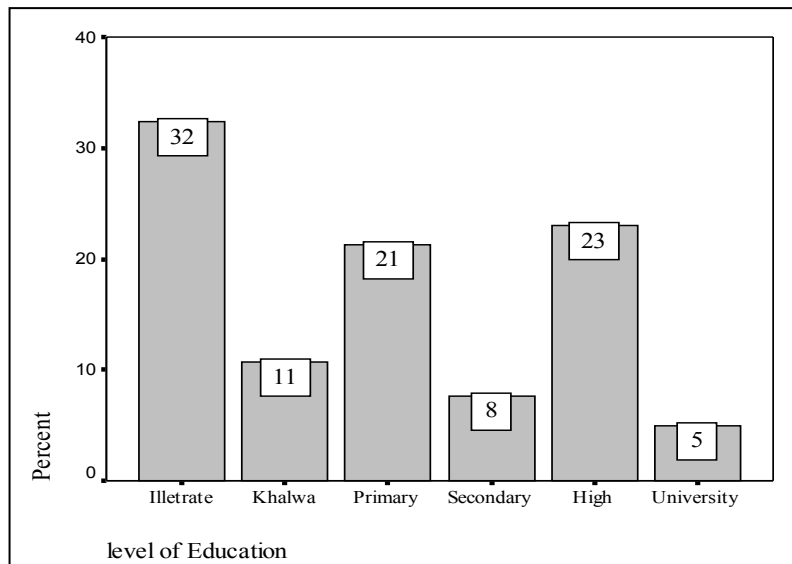


Figure 5. Educational Attainment in Butana Area

Table 5. Distribution of Pupils per class in El Idied El Saminah School

Name of the class	Number of boys	Number of girls	The total
The first class	29	12	41
The second class	26	11	37
The third class	24	3	27
The fourth class	8	6	14
The fifth class	9	Null	9
The six class	13	1	14
The seventh class	8	2	10
The eights class	3	Null	3
Total	120	35	155

International Marginalization

Not only internal marginalization as discussed above, but also external factors have a role played in the current changes of pastoralism. Pastoralists are always a victims of policy formulated and cooked outside and then either through incentives or penalties, developing countries have no option than to accept it. In some cases scholars have participated in this conspiracy by providing scientific justifications and approval for implementing such policies. For example, sedentrization of nomads, livestock ranching and integration of livestock in farming were the policies adopted by the international agencies (Westernization) without seeking to understand the pastoral livelihoods which is primarily based upon mobility. The policy of anti- nomads is also supported by international community (Donors) and UN agencies. For these agencies little can be done to nomadic pastoralism as they are not fully participate in the international economy. Faced with the failure of their policies, many major donors have stopped investing in livestock projects, on the grounds that little can be done there (Fratkin & Mearns, 2003). Therefore, Agricultural interventions remain a major component of international aid (Oxfam, 2014). In Sudan like elsewhere in developing countries both rainfed and irrigated agriculture have been fully supported by international agencies mainly World Bank (Elhadary, 2010). For the planners farming agriculture is a necessary step in moving the country forward to become a truly modern nation.

One of the international marginalization impacted negatively on pastoralism is the adoption of modernization and Structural Adjustment Programme (SAP) in many African countries including Sudan. The World Bank forced some developing countries to implement such views without considering the socio-economic nature of pastoral economy. Under modernization, huge pastoral land have been converted to irrigated and mechanized farming in Gedarif state and usually at the expense of pastoral lands. Also SAP which have been introduced on the eve of oil crisis in the early-eighties (Elhadary and Samat 2011a) has disrupted the economy of pastoral system. Up to 1992, around 78

countries have been forced to subscribe to this policy with or without pressure from the World Bank. Price liberalization, privatization, the removal of government subsidies, cuts in public expenditure accompanied by deep public sector retrenchments, relaxation of foreign exchange controls, increase in interest rates to real levels, withdrawal of protectionist measures, introduction of user fees, tight control of credit, and increase in agricultural producer prices are some of the major characteristics of this program (Musa, 2000). This policy has put huge remarkable impact on pastoralists and increase the rate of privatization of pastoral lands. According to Babiker (2006) the SAP focused on economic growth without addressing how this growth is to be redistributed to the poor, especially the marginalized minorities such as the pastoralists. According to Niboye, (2010) the recent economic reforms and trade liberalization have ushered in new threats to pastoral and agro-pastoral systems, though they have also created some opportunities.

Current Changes: Indicators and consequences

There are several consequences of the current changes, but for the purpose of this paper the focus will be on the reverse mobility, conflict over resources, land use conversion to (farming), spontaneous settlement and gender issues.

Reverse mobility

Despite the constrains imposed by socio-political marginalization, still pastoral people managed to maintain their mobility, although it's profoundly changed in structure, scale and time. Transporting water to animal is rational tactic adopted by pastoralists to overcome the restrictions imposed on spatial mobility. Thus, instead of moving animal to water sources, as was the case in the past, such service brought to the livestock. The author call this new techniques the "reverse mobility". It has been observed that in each village there are a numbers big tankers for carrying water from areas where its available (urban centers, rivers and wells) to the area needed. This strategy reflected that pastoralists have ability to survive even in a world full of pressure. The paper worried about the destiny of the accumulated local knowledge acquired through practicing mobility as it remains if mobility survives.

Conflict over Recourses

Since the abolition of local administration in 1971, conflicts over land resources between farmers and herders; and among herders have accelerated dramatically in the country. In the Butana, the conflict among pastoralists is manageable to some extent; however, the situation becomes acute when the conflict is between local groups and outsiders, as in the killing of non-Arabic speaking group (*Umbaroro-Fellatta*). The nature of this conflicts is related to the fact that the local people don't respect Fellatta as they don't recognize the communal system; secondly, they have been accused for mounting degradation and depletion of some palatable grasses; thirdly, which is more serious, Fellatta based on the Act of 1970 can graze anywhere in Butana. The 'newcomers' subsequently justified their

frequent incursions into Butana land because they are Sudanese citizens, backed up by the support of the modern state for concepts such as freedom of movement and settlement, equality of civic rights and obligations (Ayoub 2006). Consequently, destruction of *Hafirs* (an artificial lake), animal stealing, burning of pastures and even killing were some techniques used by the locals to ensure an early leave from "their lands". I was told by the police in Butana that every year they receive about one hundred fifty cases concerning land conflicts, and due to that, the government increases the capacity of police.

Another conflict arises when pastoralists move to the southern part during the dry season. This is considered as the harvesting time of crops; therefore, farmers do not allow pastoralists to pass by, although in principle they have the right to use their traditional corridors. Generally, there are eight routes organizing pastoral movement, six of them were blocked and the remaining two are becoming narrower due to the expansion of mechanized farming. As indicated mechanized farming is not only entering into the traditional routes, but they have also moved beyond the grazing line (*khutt al mara'a*). This line was considered as the northern limit for agricultural cultivation, created by the colonial administration. No mechanized farming was allowed to cultivate north ward, otherwise pastoralists would not be held responsible for crop damage. Similarly, pastoralists were instructed not to enter the cropping areas with their animals during the farming time; otherwise they would be liable to both fines and imprisonment in case of crop damage. The symbiotic relation and mutual cooperation, where farmers used to open their farms for free grazing (known locally as *Talak*) immediately after harvesting time, has no longer valid. And today, if they do not own animals (which is rare), the farmers can allow pastoralists to use the land, but only after paying for that matter. A recent study on the conflict in Darfur, western Sudan has shown that the root of violence is not because of economic, political marginalization supported by climatic variability. Instead, agricultural change and other changes relating to the land-rights and land-use systems have led to competition and exclusion, and have played a major role in the collective violence that has raged throughout the region (Oxfam, 2014).

Conversion of Pastoral Land into Crop Farming

The most serious indicators of the current changes is the decline of pastoralism and rapid expansion of farming agriculture into Butana area. Statistical data has shown that the number of pastoralists is decreasing from (13%) of the total population of the country in 1956, to (2%) in 1993. In responding to the question what are the past and current secondary job besides herding and farming. Before 1970s most of the alternative activities lie within the activities related to pastoral economy products such as making handicraft, selling of animal's products and cutting wood from the surrounding environment. Recently, half of the respondents mentioned petty trade, daily worker (33%) and the rest include butchers, drivers, teachers etc.

Regarding the current major job, (71.1 %) of the total households surveyed in Butana were farmers, an activity which was considered as secondary job in the past, and only (9%) mentioned pastoralism as a major job. The rest were teachers (13%), daily workers (1%), nursing (3.3%), driver (1%) and traders (1.7 %). This figures confirm that crop farming has become a dominant economic activity in Butana. Ecologically Butana is not suitable for farming activities, but the study highlighted several points explaining why people embarked heavily on farming. These points are organized as follows.

1. Land under farming can be registered and the right to it can be approved by the local government. Thus pastoralists shift to cultivation in order to acquire this right before other (State, investors and merchants) can claim it.
2. Stop big and large attacks from mechanized farmers and merchants into spreading in Butana area.
3. Use sorghum as supplemented fodder to compensate the loss in palatable grasses and the crop residue.
4. Having farming land will facilitate access to credits and funding.

Responding to the question about the decrease and increase in land size, most of the respondents mentioned that their land plots are increasing. This reflected the attack of grabbing pastoral land. People in Butana have tried to claim pastoral land individually before strangers does (land for all). The data has shown that the size of land varies as it ranges from (3 up to 2000 feddan) with an average of (150 feddan) per households. Besides inheriting land, the paper discovered a new method in acquiring land in Butana area. This is through the mechanism named "a newly open (*Arabic:faith jaded*) means that land never used before (forest or a common grazing area). Based on this figure the paper states that Butana area which was a pure rangeland in the past now has changed into farming agriculture. In response to the question how farmers compensate the loss when there is sharp decline in crop production. (26%) mentioned that selling animals is a better strategy for compensation. This indicated that people in Butana are adopting settled life and use economic diversification strategy to cope with the current situation. Ecologically, the unplanned expansion of crop farming into fragile environment of Butana will speed up the process degradation not in Butana but for the whole state.

Spontaneous Settlement (Sedentization)

Settlement of nomads is one of the indicators of the recent changes in the study area. In responding to the question what are the real factors that forced you to settle and give up nomadic life. Declining in livestock number, access to education and water services, and repeated drought are some of the causes behind spontaneous settlement (Figure 6). This figure indicated that (9%) of the respondents adopted settled life because of the drought. Butana as well as the whole of African Sahel had hit hard by the drought of mid eighties and in 1990s. Again around (9%) mentioned that they settled

because of the adoption of modern ideas "Hadara". This might be due to the bad signal sent by the planners "being nomad means primitiveness while civilized people have always permanent settlement". The researcher fully agreed with that the pastoralists adopted recent settlements because they lost their main assets (animals) due to socio-political marginalization. This idea is supported by Sheikh Mohamed Awad the tribal leader of Eltakoon village "he said irony we had settled simply because we have no wealth to follow as was in the past".

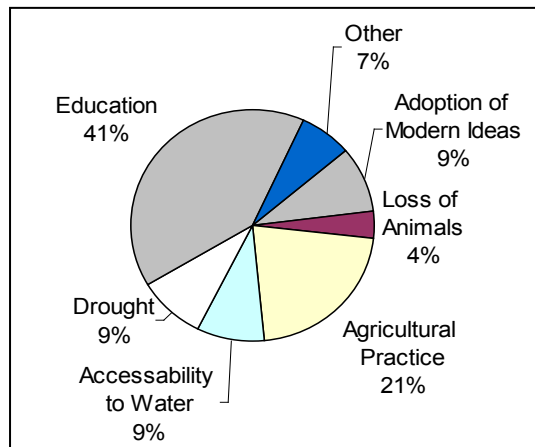


Figure 6. Causes of Current Settlement in Butana

Gender Issues

The recent change has shed negative light into all aspects of pastoral system with remarkable impact on women. Today woman have lost their economic position that they used to play in pastoral life and become more dependent on man. For example, in the past selling of milk by men was considered as taboo in the pastoral communities thus, milk and its related products was the major assets for women. Due to the role of market economy men are in need to sell milk in order to buy supplemented fodder for their herds. Therefore the economic situation and social position of women has deteriorated dramatically. It was observed that the price of milk in Butana is the same as in the market of Gedarif town.

It is worth mentioning that women become marginalized in the society as in the past women took the responsibility of some pastoral productions such as collection of fuel, taking care of small animals, and milking. But, due to the recent changes women lost those major contributions hence, becoming passive agent in livestock decision. Responding to the question about who is responsible for bringing firewood currently and in the past. (37%) of the respondents mentioned that in the past this was the duty of women but for today none mentioned them. These figure confirms first and foremost the severe degradation and at the same time reflects the changing roles of women as they are too busy in (cooking (flouring Dura), taking care of kids and doing other hard job like (making bricks). Women also lost its major duty in making handicraft and moving tenant (mobile house). This activities are no longer valid as it remains if mobility remains.

Changes are not always negative in the side of woman. Although market economy put more socio-economic pressure, it offers woman more valuable things. For example, women today can access schools, express their views, demand their rights and to some extent were free in making decisions. This idea is supported by (Holter, 1994) who mentioned that in 1991 the UNDP project was started and two young lady teachers tried to teach the women the alphabet and new cooking recipes, the women were very much interested. They had specific reasons why they wanted to learn, how to read and write and express their ideas clearly: they hoped for more freedom in making decisions and in defining their own affairs and interest, such as choosing a marriage partner, or in legal matter as they said treatment was unjust here.

4. Conclusions

The paper assures that pastoralism in Butana has undergone tremendous change during the last five decades. It has been taken for granted that repeated drought is an essential factor behind the such changes. Empirical evidences from Butana have shown that exogenous and endogenous marginalization have to be fully blamed rather than accusing only natural factor. Privatization of pastoral land and rapid expansion of unplanned crop farming have restricted mobility, a wise strategy adopted by pastoralists to survive the hard nature. Traditional mobile pastoralism has no longer valid in Butana as most of the pastoralists are now adopting sedentary life and become an agro-pastoralists. Practicing farming agriculture in ecologically marginal area is not an alternative choice but it's the only solution left for pastoralists to secure their land right. Despite the constrains, pastoralism still is there but it has shifted from being the major economic activity to being a minor and use to compensate failures in farming activities. Although women hit economically hard by the current changes but accessing to education, getting official jobs and finding ways to demand and express her rights are some of the essential gains. Pastoralists' adaptation strategies towards hard nature should be acknowledged and enhanced especially in the face of current global change. This is through the conducting multidisciplinary research that integrate both social (geography, political science and anthropology) as well as natural sciences. Having an independent Ministry of Animal Resources away from agriculture is a must.

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