

**THE IMPACT OF PASTROLISM ON GRASS LAND, A CASE STUDY OF
GOGREAL COUNTY, WARRAB STATE, SOUTH SUDAN.**

BY

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Approval

This is to certify that this research report has been submitted for examination with my approval as a university supervisor.

Supervisor

Signature.....

Orishaba R. Ammon

Date.....

Dedication

This book is dedicated to my beloved parents; Mr and Mrs. Tor Deng Mawien and my sister, Arual.

May the Almighty God bless them abundantly!

Acknowledgement

I would like to acknowledge the Kampala International University (K.I.U) Environmental department leadership, for providing me with an ample time in the preparation of the research report. My thanks also go to my supervisor Mr. Ammon Orishaba who tirelessly guided me and enabled me to finish my study. Also special thanks go to my father and Mother Mr. and Mrs. Tor Deng Mawien for their encouragement, and support constantly praying for me throughout my studies.

May God bless them all.

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CHAPTER ONE

1.0 Introduction

The chapter covers the background of the study, statement of the problem, objectives of the study, research questions, purpose of the study, and the significance of the study.

1.1 Background of the study

In this chapter, researcher focused on the major effects, challenges and solutions. For many years, biologists and anthropologists have realized that the organic and the cultural evolution of human beings have been interdependent, mutually complementary processes (e.g., Roe and Simpson, 1958; Caspari, 1963; Dobzhansky, 1961, 1962, 1963; Montagu, 1962, 1968a, b; McBride, 1971). In anthropology, this realization prompted the analysis of cultures and social systems as superorganic extensions of human adaptation (e.g., Cohen, 1974b; Meggers, 1971, 1973; Rappaport, 1969, 1971a,b; Sanders and Price, 1968; Steward, 1955; Vayda, 1969). The major contention has been that cultural practices provide people with the behavioral means of adjustment to the physical and social conditions of their lives (Harris, 1974; Rappaport, 1969, 1971 a,b; Vayda, 1961). However, ecological anthropology has suffered from a lack of agreement about how best to characterize adaptation and about how to describe the processes producing it (cf. Alland and Mceay, 1973; Flannery, 1972).

Sometimes pastoralists move their herds across international borders in search of new grazing or for trade. This cross-border activity can occasionally lead to tensions with national governments as this activity is often informal and beyond their control and regulation. In East Africa, for example, over 95% of cross-border trade is through unofficial channels and the unofficial trade of live cattle, camels, sheep and goats from Ethiopia sold to Somalia, Kenya and Djibouti generates an estimated total value of between US\$250 and US\$300 million annually (100 times more than the official figure). This trade helps lower food prices, increase food security, relieve border tensions and

promote regional integration. However, there are also risks as the unregulated and undocumented nature of this trade run risks, such as allow disease to spread more easily across national borders. Furthermore, governments are unhappy with lost tax revenue and foreign exchange revenues.

1.2 Statement of the problem

South Sudan is partly a pastrolism country as well as other activities aside; pastoralism represents one example of an area for investment in which the dual objectives of development and biodiversity conservation can be achieved recognizing the important role of pastoralism in cultures, traditions, livelihoods and the provision of ecosystem services. For example, maintaining vegetative cover through sustainable pastoralism can contribute to the provision of many ecosystem services both for pastoral people and their livestock and for surrounding land users. Furthermore, despite the common misconception that development is not compatible with pastoralism, there are many developed pastoral systems that are excluded from common understandings of pastoralism precisely because they are developed.

1.3 Study objectives

- 1) To find out the pastrolism activities done in the area.
- 2) To find out the effect of the activities on grassland .
- 3) To find out the possible ways to reduce the effect of pastrolism.

1.4 Research questions

- 1) What are the major impacts of pastrolism on grassland?
- 2) What are the effects of the activities done in pastrolism?
- 3) What are the solutions to the problems affecting pastrolism?

1.5 Purpose of the study

The purpose of this study is to investigate the impacts of pastoralism on grassland, a case study of Gogreal County, Warrab State, South Sudan.

1.6 Scope of the study

This study on impact of pastoralism on grass land, a case study of Gogreal County, Warrab State, South Sudan mainly focuses on the regions around the study area, the researcher carried out the research in one months period by using primary and secondary methods. Data was collected by the researcher using questionnaires, interviews, group discussions, and document analysis techniques. This study was specifically seeking to determine the impact of pastoralism on grassland, a case study of Gogreal County, Warrab State, South Sudan.

1.7 Significance of the study

This study was to be of great importance to the following people:

The study was helpful to the ministry of agriculture and livestock in ensuring that activities practiced by the local communities are environmental friendly and therefore was to be in line with the theme of sustainable development in achieving millennium goals by 2030.

This study fully equips to the non governmental organization (NGOs) and community based organizations (CBOs) who are very much concerned about the environment with relevant information they need in the conservation and management of the non renewable resources (land). It also helps the local people to enhance their capacity of understanding the environment and its significance to hence making them to appreciate it.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Literature review encompasses areas relevant to the study that have been reviewed. It includes findings made by other researchers and scholars as well as analysis of these findings in order to reveal the gaps that need attention.

2.1 Pastoralism activities in South Sudan

Livestock production systems in Sudan have changed over time owing to internal and external influences. Large development schemes, desertification, drought, war, population growth, and other factors have affected pastoral systems of livelihood. The different production systems present in Sudan are include; Pastoral nomads, transhumant's, and sedentary farmers possess up to 90 percent of the animal wealth in Sudan; therefore they are responsible for the major source of meat for domestic and export markets (Ahmed 2002). Nomads move permanently between seasonal pastures with their animals (cattle, camels, sheep, and some goats). They engage in extensive pastoralism in which livestock are herded upon the open range (Majok and Schwabe 1996). Nomads spend the rainy season in the northern, semi-desert zone and the dry season further south into the savannah. There are widely ranging estimates of the number of nomads in Sudan (cf. Ibrahim 1999; Ahmed 2002; Manger 2001), but they tend to own the largest herds (Ibrahim 1999). In transhumance, households depend mainly on livestock herding but seasonally return for a period to grazing and farming or harvesting around a home base (Majok and Schwabe 1996; Ibrahim 1999). In western Sudan, households and livestock (cattle, sheep, camels) migrate north during the rainy season and return south to the savannah during the dry season. In Southern Sudan, Dinka transhumants move with livestock (cattle, sheep, goats) to grazing areas (*toich*) during the dry season and back to their permanent homesteads during the rainy season (Majok and

Schwabe 1996). Transhumants may also possess and travel with chickens (Wilson 1979; cf. Majok and Schwabe 1996).

Because pastoralism often takes place in areas such as drylands, conventionally defined as water-stressed regions, locally adapted livestock breeds are critical for productivity. Such breeds tend to have higher resistance to disease, drought and parasites since they have evolved in parallel to such pressures. As such, despite being viewed as having limited productive potential, drylands maintain 46% of global livestock diversity. In the Near East, 90% of livestock diversity can be attributed to dryland pastoral systems. By continuing to manage indigenous livestock breeds, pastoralists maintain not only genetic diversity but also important indigenous knowledge regarding the health, management and reproduction of livestock.

When pastoralism uses native livestock breeds and relies on mixed fodder types, a number of benefits are realized for plant and landscape diversity. Compared to large scale enclosed grazing practices, pastoralism can be much closer to the grazing patterns of wildlife, thereby mimicking natural ecosystem interactions and functional roles. For example, on the Island of Islay off the Scottish coast, traditional cattle herding makes use of bogs, heaths and grasslands without exerting too much pressure on any one landscape or attempting to convert this mosaic of landscapes into a single ecosystem type. When compared to many agricultural practices elsewhere that extensively drain wetlands in order to convert them to croplands, the contribution of pastoralism to plant and landscape diversity becomes clear. (Niamir-Fuller M. 1994)

2.2 Effects of pastoral activities to the Grassland in South Sudan

Dry lands occupy 41% of Earth's land area and are home to more than 2 billion people. Despite the characteristic low and highly variable precipitation in these regions, they can produce numerous ecosystem services, including food, fibre, forage, fuel wood, freshwater, regulation of water quality, pollination, seed dispersal, and wildlife habitat. Dry lands also contribute to cultural services such as recreation, tourism, cultural identity,

indigenous knowledge, and supporting services such as soil development, primary production and nutrient cycling. These services deliver the basic material needs for survival, and underlie many aspects of sustainable livelihoods, including health, security, good social relations and freedom of choice. Landmines (anti-personnel and anti-tank mines) and explosive remnants of war (unexploded ordnance and abandoned ordnance) threaten the lives and livelihoods of poor pastoralists and agro-pastoralists in Sudan. There has been no comprehensive survey of affected areas, but mines and explosive remnants of war (ERW) may affect 21 of Sudan's 26 states⁴⁶ (Landmine Monitor 2006). Of particular concern for pastoralists and agro-pastoralists, mines have been placed along livestock migratory routes and in rangelands, killing and maiming herders as well as animals and negatively impacting pastoral livelihoods (McGrath 2001).

Pastoralists play an important role in the flow of ecosystem goods and services in drylands. Pastoralists depend on the provision of fodder as livestock feed, as well as ecosystem services such as water cycling in these water-scarce regions. At the same time, their activities contribute to the production and stability of ecosystem services. Livestock grazing, for example, influences the fertility, distribution and diversity of plants, as animals scarify seeds in their guts, transport them over large distances, and fertilize grounds where seeds are deposited. The vegetation maintained through grazing activities in turn captures carbon, reduces erosion, maintains soils, facilitates water holding capacity and provides habitat for wildlife. Most pastoral systems are steeped in cultural practices and indigenous knowledge, "cultural services" which are highly valued and often irreplaceable. Pastoralism produces a range of direct goods and services such as meat, milk, fibres, hides, income generation, transport, savings and insurance. The Millennium Ecosystem Assessment (MEA), a scientific undertaking involving over 1300 experts working in 95 countries, examined the state of 24 ecosystem services that make a direct contribution to human well-being. The MEA concluded that approximately 10–20% of dry lands are already degraded. About 1–6% of the dryland people live in decertified areas, while a much larger number is under threat from further desertification.

Policies to replace pastoralism with sedentary cultivation in rangelands can contribute to desertification, and in turn restrict livelihood options and lead to increased poverty.

2.3 Possible ways of overcoming effects of pastoralism on the grassland

In June 2006, the NCP unveiled the Green Alert Programme (aka Green Mobilisation) to promote the development of the agricultural and livestock sector in Sudan (MAF 2006). After NCP developed the programme, the Ministry of Agriculture and Forests and the Ministry of Finance and National Economy presented it to President Al-Bashir and the Council of Ministers, which approved it (Abu Saif 2006). The Green Alert Programme calls for 313 billion SD (\$US 1.4 billion) in expenditures between 2006 and 2010, with 60 percent coming from public sources and 40 percent from banks.²⁸ Including public and private funding, the Green Alert Programme allocates 56 percent of funds for irrigated and mechanised rain-fed agriculture, 37 percent for animal production, and the remaining 7 percent for forests, support for State Agricultural Administrations, pest control, research centers, seed production centers, and training centers.

Pastoralism is typically based on local management systems for the sustainable use of wild and domesticated species. Grazing land management, especially in drought-prone areas, is a complex process requiring a balance between the use of water, food, fodder, fuel, etc.. As users of grazing lands who are reliant upon the continued provision of such ecosystem services, pastoralists have a unique knowledge of how a balance between conservation and sustainable use can be achieved and maintained. In addition to seasonal and annual changes in use patterns, pastoralists are also able to quickly respond to perturbations.

Because of their close historical connections with biodiversity, pastoralists also benefit from the cultural services provided by the ecosystems in which they live. This is often reflected in local management practices which largely emphasize long time horizons in decision-making in order to maintain culturally important elements of the ecosystem. For example, in Rajasthan India, Raika and Rabari pastoral people use local decision-making

processes to sustainably manage mixed livestock herds to produce meat and milk (Blench 2000). Where traditional pastoral livelihoods and management practices are replaced or restricted, however, the degradation of critical ecosystem services often follows. (Ogutu, J., N. Bhola, and R. Reid. 2005)

Many pastoral systems are good examples of the application of the ecosystem approach. The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems. Through its twelve principles, the ecosystem approach balances production and economic considerations with conservation and the maintenance of ecosystem services. The ecosystem approach also recognizes the importance of involving all stakeholders in decision-making and of decentralizing management to the lowest level possible (SCBD 2004b). As a result of changing policies (e.g. affecting pastoralists' land and water access), continuing biodiversity loss, population growth, and accelerating climate change, the future of pastoralism and the role that it has played in biodiversity conservation and sustainable use remains unclear. Existing constraints to pastoralism, including exposure to droughts, and pest and disease outbreaks, are unlikely to diminish and may, in many cases, increase due to climate change.

2.4 Theoretical framework.

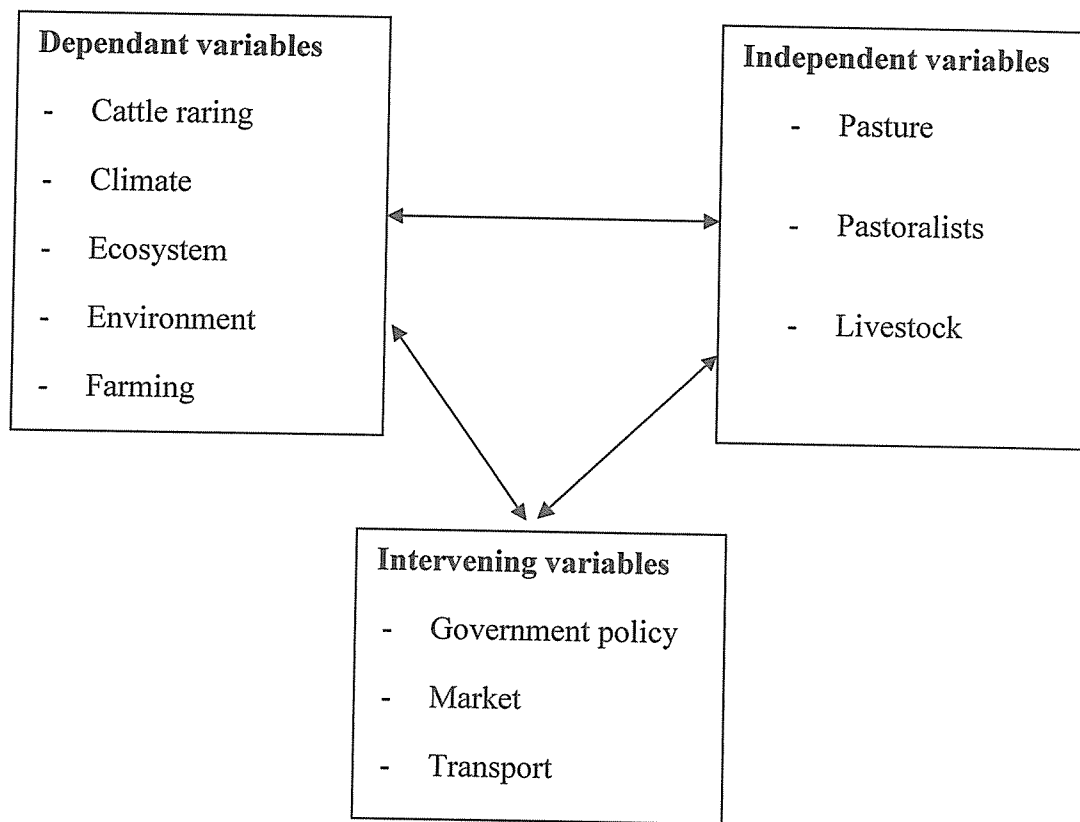
Actions that shift pastoralism from a sustainable to an unsustainable land use option, such as the conversion of pastoral lands to sedentary agriculture or the replacement of traditional livestock breeds with exotic stock, can cause the degradation of ecosystem services. For example, degradation of vegetative cover can undermine water cycling leading to both increased flooding and increased drought threatening both development and biodiversity objectives. In order to achieve benefits from pastoralism, however, the value of pastoralism needs to be recognized. Some progress has already been made - in Europe, for example, countries such as Spain, France and Switzerland are investing in pastoralism in order to protect biodiversity. In fact, projects to promote pastoralism can

be found in all regions of the world however efforts still need to be stepped up. (*Haro, and G. Borrini-Feyerabend*)

Pastoralism, the use of extensive grazing on rangelands for livestock production, is an important economic and cultural way of life for between 100 and 200 million people throughout the world. Extensive pastoral production systems cover about 25% of the earth's terrestrial surface. Many pastoralists can be found in Africa; however pastoralism is also practiced in dry and sub-humid lands in the Middle East, South and East Asia, South America and Europe. In sub-Saharan Africa about 16% of the population relies on pastoralism, and in some countries, such as Somalia and Mauritania, pastoralists represent a majority of the population. Though there is great diversity in pastoral systems, they are usually characterized by low population densities, high mobility and dynamism, complex information systems and a high dependency on local knowledge. Pastoralist communities are also often socially, economically and politically marginalized. Yet, they make significant contributions to national economies, to the achievement of development goals and to the maintenance of ecosystem goods and services in rangelands.

As users of rangelands who are reliant upon the provision of numerous ecosystem services (e.g. water, food, fodder), pastoralists have a unique knowledge of how a balance between conservation and sustainable use can be maintained. Biodiversity can be described as the diversity of life on Earth. Simply put, biodiversity is the variety of all living things, the places they inhabit, and the interaction between the two. Interactions between the components of biodiversity make the Earth inhabitable for all species, including humans. Biodiversity is directly responsible for around 40% of the world's economy, particularly in sectors such as agriculture and forestry, and for ecosystem services such as clean water and soil fertility. 70% of the world's poor live in rural areas and depend directly on biodiversity for their survival and well-being. (Hatfield, R. and J. Davies)

2.5 Conceptual framework



CHAPTER THREE

METHODOLOGY

3.0 Introduction

Methodology involves the proposed research design, population and sample, data collection procedures, data analysis procedures and description of the study area.

3.1 Study area

Warrab division which is in Gogreal County lies between latitudes 0058 and 002'S and longitude 38034'E. The seasonal rivers provide water during the wet seasons for both human and livestock though they greatly interfere with the roads, which are already in sorry states. The area is hot and dry much of the year, receiving scarce rainfall in the range of 150mm-300mm annually. Frequent droughts and unreliable rains do not favor the growth of pasture and agriculture in the area. However, trees like acacia permanently grows there and are adapted to this environment and all other factors like introduction invasive species, flooding and wildfires kept constant, acacia grows very well in this environment which are normally used by the local communities as a building materials and fire woods.

3.2 Research design

This research is a correlation research with a cross-sectional design. It is a co-relational research because it is about identifying the impacts of pastoralism on the Grassland of South Sudan. The relationship may be causal relationship where the ever increasing number of pastoralists with animals to feed need enough pasture for grazing their animals. It is of a cross-sectional design because the data was collected once.

3.3 Sampling size

The target population of the research was pastoralists and the host community in South Sudan. However, ideally it is not possible to get information from the whole population due to limited resources thus a sample of fifty respondents (50) were considered as appropriate for the study. The sample included in the different members of the society regardless of their social status as long they fell into the 50 selected respondents in South Sudan, i.e. youth, children, women, elderly men and any other concerned parties who have an interest in contributing information to this research.

The research employed random sampling and purpose sampling techniques. The major purpose for this is to ensure that precise information from the respondents which won't be easy to allocate them and yet they are crucial for the study. Further more the purpose sampling is important is important because selected informants are selected based and a great deal of knowledge about the subject under study.

3.4 Sampling techniques

This section describes the sampling techniques, sampling size, and the sampling procedures and the reasons why certain sampling techniques, sampling size and sampling procedures were employed from the research.

3.5 Methods of data collection

The researcher used different methods of data collection. These methods included observations, questionnaires, interviewing, and reading documents on what is relevant to the research.

3.5.1 Research instruments

The researcher employed various instruments to collect relevant data from the field, thus the following research instruments were used in the study.

3.5.2 Questionnaire

Questionnaires were to be administered to the respondent at the various levels of the population sampled in Gogreal district for the 29 selected sites so as to get relevant data required in the study, questionnaires, were to be both open-end and close end. These questionnaires were translated to the other local languages used by the people.

3.5.3 Observation

The observation guide helped the researcher identify the various impacts, challenges and effects of pastoralism to the Grassland in the area. This method was used to supplement the data that was captured by the other methods. The observation was done based on the researcher's fundamental questions. This was done in the area of study (Warrab division, South Sudan).

3.5.4 Interview

Both structured and non-structured interview were used to gather key data from the respondents and key informants. The interview was based on a guide with a checklist of questions for pastoralists and households as well as the local chiefs and district commissioners in those selected sites. Interview was very vital in getting information from who are illiterate who have very important information relevant to this study.

3.6 Sources of data

The researcher focused on getting relevant data and information from diverse sources; however the researcher concentrated on two major sources i.e. primary source of data and secondary source of data.

3.6.1 Primary data

This data was mainly collected from the field using research instruments such as in-depth interviews, focused group discussion, and direct observations as well as open end and close end questionnaires, among others.

3.6.2 Secondary data

Secondary data was gathered from the available documentation concerning about impacts of pastoralism on the Grassland areas in Warrab South Sudan. The sources of information include books, journals, internet and relevant documentations from the non governmental organization as well as government officials who work in those selected sites.

3.7 Data processing

Research objectives, qualitative and framework guide the processing stage. And then was presented in tables.

CHAPTER FOUR

FINDINGS, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter presents the research analysis, interpretation and findings. The diverse research themes that were raised during the course of data collection as addressed. They include: The contribution of pastoralism to the livestock genetic diversity, the ecosystem goods and services of pastoral systems and the pastoral management systems and the ecosystem approaches. the various suggestions and recommendations that can be put in place to ensure proper ways and practices of pastoralism in the region. The data to establish the above variables were generated from interviews and questionnaires of 29 households, business owners and local council officers.

4.2 Key Characteristics of the Respondents

Sex and Age

The main intention of knowing the age and sex of respondents is to facilitate the researcher to get the reliable data and eventually arrive at pragmatic conclusions. The conclusion which takes an aspect of gender balance in this study is proved important because both males and females differently contributed to the various impacts of pastoralism. The summary of those findings are presented in the Table I below.

Table 1: sex of the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	34	68.0	68.0	68.0
	Females	16	32.0	32.0	100.0
	Total	50	100.0	100.0	

Source: Field Data

Majority (68%) of the respondents were males while only 32% were females. The majority (56%) being men can be explained by the fact that the men are mostly cattle keepers and are the heads of the home.

The ages of the respondents from both households and businesses were grouped into three cohorts. This is presented in Table 2.

Table 2: Age of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 10-15	13	25.5	26.0	26.0
16-20	17	33.3	34.0	60.0
21-30	10	19.6	20.0	80.0
31-45	5	9.8	10.0	90.0
Above 45	5	9.8	10.0	100.0
Total	50	100	100.0	

Source: Field Data

The findings on Table 2 above indicated that the majority 33.3% of the respondents were in the age bracket of 16-20, followed by 25.5% who were in the age bracket of 10-15. 19.6% were in the age of 21-30 followed by 9.8% that were in the ages 31-45 and 45 and above respectively. The biggest percentage where asked why they make up the majority portion and they answered that their parents leave the animals to them to take care of while the parents take care of the family since they are the eldest sons and daughters.

Education Level of Respondents

The educational level of people determines to a large extent the nature of their responses and their understanding of the issues at stake. The results are shown in the table below.

Table 3: Education Level of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No formal Education	7	14.0	14.0	14.0
	Primary	21	42.0	42.0	56.0
	Secondary	17	34.0	34.0	90.0
	Post Secondary	5	10.0	10.0	100.0
	Total	50	100.0	100.0	

Source: Field data

Since most of the youths are engaged in livestock farming, their level of education is determined by how much work and responsibility they have to bare with in order to take care of their families, the majority of them with 42% (21) respondents had dropped out of school after completing their primary studies so that they can take care of the family business and only source of food, whereas 34% (17) had gone further to secondary education so that they can achieve enough quality information to cater for their future lives as well as their livestock, 14% and 10% had attained no formal education at all and post secondary respectively. This shows that most of the respondents are mostly engaged in their livestock activities other than their curriculum experiences.

Marital Status of Respondents

Table 4: Marital Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	13	26.0	26.0	26.0
	Married	22	44.0	44.0	70.0
	Divorced	9	18.0	18.0	88.0
	Widowed	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

Source: Field data

When asked about their marital status, 44% of the respondents were married, followed by 26% who were single, 18% were divorced while 12% were widowed.

4.3 Pastoralism as an activity

It was important to know why pastoralism is considered as the major activity in the region, a number of questions were asked and the respondents views why as follows;

Table 5: Number of Animals reared

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 40 & above	34	68.0	68.0	68.0
1-20	13	26.0	26.0	94.0
21-40	3	6.0	6.0	100.0
Total	50	100.0	100.0	

Source: Field data

From the findings, 68% of the respondents revealed that they where pastoralists who had a large number of herds that are supposed to be fed every day, whereas 26% of the respondents had only 1-20 animals that they had to be feeding in order to get more, and 6% of the respondents had 21-40 cattle and sheep to rear every day.

4.3.1 Access to green pasture (grass land)

As a major essential in cattle rearing or pastrolism, respondents were asked if they had access to green pastures and their responses are shown in the table below.

Table 6: Access to green pasture

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	35	70.0	70.0	70.0
No	15	30.0	30.0	100.0
Total	50	100.0	100.0	

Source: Field data

From the table above, 70% of the respondents had access to clear green pastures which they always used to feed their livestock on a daily basis, whereas 30% of the respondents had no green pastures at all and they reported that they normally ask permission from other families to feed their animals.

4.4 Effects of pastoralism to Grassland and the community of South Sudan

In an attempt to know the distance the respondents take from their farms to the nearest pasture grounds, the respondents marked the distance as in the table below;

Table 7; Distance covered from the farm to the pasture or feeding grounds

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Less than 200 meters	23	46.0	46.0	46.0
Between 200 & 250 meters	15	30.0	30.0	76.0
Between 250 & 350 meters	10	20.0	20.0	96.0
More than 400 meters	2	4.0	4.0	100.0
Total	50	100.0	100.0	

From the table above, 46% of the respondents showed that they move 100 meters distance for pasture to feed their animals, 30% and 20% move a distance of 200-250 meters and 250-350 meters a day to and from for green pastures to feed their animals, and 4% of the respondents move a distance of 400 meters in order for them to get pasture for their animals to feed. The 4% of the respondents move all this distance majorly because they have no green pastures in their farms so they end up moving to other regions (towns) so that they can find food for their animals.

4.5 Solutions to the various factors affecting pastoralism in South Sudan

Environmental changes and climate change affects every part of the world, from the third world countries to the first world countries. Climatic changes have contributed to the farmer's unhappiness moments by destroying all pastures and green housing of the

environment. This issue was stressed out by most of the pastoralists as the major hindrance affecting their day to day activities.

The environmental conditions in Southern Sudan are mostly dry conditions which do not favor any other agricultural activity, hence pastoralism is the only reasonable activity. Pastoralism on the other hand can also be affected by the ever changing climate conditions since the green pasture may end up dry which doesn't favor animal rearing and as a result the pastoralists are forced to move to other places.

The Agricultural Research Project, a joint World Bank/ USAID/IFAD project, ran from 1978 to 1987. Its main objectives were to facilitate the development of new agricultural technology in Kordofan and Darfur by building research capacity in two main areas, livestock and crop production systems and water and land management. The project was divided into two stages. The first consisted of the construction of buildings and the procurement of goods and staffing for research facilities, and the second was to launch the research programmes. The project was developed in response to the government's focus on irrigated agriculture and the neglect of rain-fed regions in Western Sudan. It was to be integrated into the government's Master Plan for strengthening national capacity for research and technology development.

Crop cultivation has become increasingly important in recent years as a result of the decline in mobile pastoralism. A recent innovation, have emerged as the major cash crop, especially in western areas such as Meiram, Tibon, Debab and Muqadama, which double as major watermelon-marketing centres, from where the crop is exported as far afield as El Obeid and En-Nahud in North Kordofan and Kosti in central Sudan.

The area cultivated by individual households varies considerably, from around five *mukhamas*² in Mugaddama (west of Muglad) to nine *mukhamas* towards the north, in Umm Osh to the west of Babanousa. Some households cultivate up to 20 *mukhamas* depending on the availability of labour and financing. As a general rule, half of the area is

given over to food crops, mainly millet, and the other half to cash crops, especially groundnuts and hibiscus. Sesame tends to be cultivated in very small areas. Intercropping of cash crops is common. Crop yields in 2007 averaged three or four sacks (270–360kg) per *mukhama* for millet, compared with around eight sacks (720kg) a decade ago.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the summary of findings, implications, recommendations and conclusions drawn from the findings. It highlights issues that were revealed during the research with regard to the families carrying out pastoralism as their major economic activity. The findings are based on a survey of 50 respondents from households and farms in Gogreal County, Warrab State, South Sudan

5.2 Summary of Findings

Pastoralist regions in Kenya, Uganda, Sudan and Ethiopia, where few other economic activities are practiced, have long been neglected by their governments, not just in terms of infrastructure such as roads and water, but also of protection. The absence of police partly explains the prevalence of small arms. According to Riam Riam, insecurity has led thousands of residents in some areas, such as Lomelo division in Turkana South district, where 26 people were killed in clashes in 2006, to flee.

Another trigger of insecurity was the proliferation of political boundaries: what used to be a single district is now divided into six. While the government says the new districts brings additional services to locals, critics argue that such boundaries boost conflict by instilling a sense of them-and-us, of ownership and incursion, among communities that previously regarded pastureland and water points as shared resources.

A report by the Small Arms Survey, a Geneva-based research organisation, spells out the challenges facing pastoralists in this region of Africa: "A lack of basic services, unreliable water supplies, poor leadership, depressed local economies, insufficient responses to drought, widespread poverty and extremely poor health and nutrition. As a result, a culture of cattle rustling has flourished exacerbated by widespread access to and

misuse of firearms. Government attempts to 'pacify' these communities have tended to be antagonistic, repressive, uneven, top-down militaristic disarmament operations that have done little to address the root causes of local conflict while failing to provide security for disarmed communities, or to act in the interests of local people.

This policy also offsets another problem facing the regular police - the poor condition of the few roads in pastoral areas. It's not always easy [for security forces] to help them when they hear of a raid.

5.3 Conclusions

The study concludes that, pastoralism is the major economic activity in Southern Sudan but it faces a number of challenges of which these challenges cost lives especially cattle rustling since the pastoralists carry guns.

Notwithstanding the diversity, and the often bitter conflict and rivalry between pastoralist communities in Africa, they share important commonalities in the issues they face. Some of the issues summarized in this research were identified by pastoralists in Gogrial County, South Sudan. These issues have been summarized below with supporting documentation from the Pastoral and Environmental Network in the Horn of Africa (PENHA).

In 2004 the Government of Sudan elaborated a national policy for sustainable development of arid and semi-arid lands of South Sudan yet, implementation has been piecemeal. As a consequence, the pastoral communities of South Sudan have remained the poorest of the country's poor with an estimated poverty incidence of 60%. Many of the policies directed at pastoral areas lack a holistic approach to development, emphasizing instead, technical issues and neglecting critical social, economic and political concerns. Their formulation and implementation do not evolve from a consultative process and so largely exclude local perspectives. Most pastoral communities also lack support from the highest levels of government, and have rarely benefited from policies and institutional frameworks explicitly designed to address their

problems or develop their potential. This lack of political leverage and governance structure has denied pastoral people the opportunity to influence policy processes in their favor. As a consequence, they remain highly marginalized, neglected, socially excluded and unable to fully make use of their own resource endowments.

Conflict and insecurity (banditry and cattle raiding) was identified by all the regions as one of the most serious issue currently facing pastoralists. Conflict is rampant in pastoral areas. Such conflict stems not only from competition over pastoral resources, but also from borders and boundaries established without taking into account the needs of pastoralism, from weakening of customary conflict prevention and resolution mechanisms, from a decline in mobility and from a proliferation of small arms. Conflicts in pastoral areas are often aggravated by politicization and lack of adequate or appropriate intervention by security forces.

Recently, the government undertook a stakeholder survey and analysis of more than 500 stakeholder groups and individuals who influence pastoralists and pastoralism. The stakeholder survey and analysis has provided a strong foundation and strategy for participation for the future of the project and has established a stakeholder network and database. Representatives of this stakeholder network participated in a national workshop and jointly agreed to take forward a strategy for participatory policy review in Sudan with Tufts/FIC and partners. Specifically, a national reference group of stakeholders agreed to work with the Tufts/FIC team to adapt an existing successful training course on Pastoralism and Policy in East Africa for use in Sudan. Tufts/FIC has now started this process with partners, SOS Sahel Sudan, and the International Institute for the Environment and Development.

The first year of the project generated multiple outputs, including the establishment of a national pastoralism stakeholder group (500 database entries), plus a national reference group and adaptation team. An attitude survey at the beginning and end of the pastoralism policy training workshop demonstrated a significant shift in participants views on mobility, gender, environment, and attitudes to change. More than 40

participants agreed unanimously that this training should be adapted and applied in Sudan, thus providing national endorsement of the approach. As a result, the Nomads Development Council of Sudan and Tufts/FIC are in the process of developing a Memorandum of Understanding.

5.4 Recommendations

Pastoralism in Gogrial County, Warrab State, South Sudan can still be carried out in the region, but for the government to guarantee its citizens security (pastoralists) they first of all need to be disarmed, helped and sensitized about the dangers of cattle rustling, provided with pesticides for their animals treatment, among others.

It is necessary to take into consideration the fact that the various viewpoints on the landscapes herein considered, are the result upon a system in a given space. These viewpoints can be those of: the agro-pastoral societies that shape them, the other inhabitants, the authorities that manage them, those who care for their preservation, visitors or those who discover them from a distance by varying means of communication. Because these viewpoints can be antagonistic, the recognition and management process imply a negotiation in order to firstly attain a common vision at a local governance level.

The agro-pastoral systems (societies, development methods, cultures and landscapes), remain very fragile in the current context, particularly in the context of climate change and economic globalization. For this reason they require support from the State politics that would reflect the recognition of their cultural and natural heritage value (tangible and intangible) and the value that society as a whole, attributes to them.

In Sudan, livelihoods and conflict are closely linked. Darfur is an extreme example of how conflict destroys livelihoods and how pressures on people's livelihoods, combined with a governance gap, can generate conflict. The recent secession of South Sudan from North Sudan has generated further conflict and has major implications for livelihoods of groups north and south of the new international border. Tufts/FIC and partners have been researching livelihoods and conflict-related issues since 2004, and have established an ongoing program of action research and capacity-building. The goal of the Tufts/FIC

program is to reduce the vulnerability of livelihoods in conflict settings by widening livelihood options and enabling more informed choice. This requires both a better understanding of the livelihood conflict linkages and reestablishing relationships, supporting networks, and strengthening local capacities and local governance.

As part of a five-year UNEP Sudan Integrated Environment Project, Tufts/FIC is leading on the livelihoods component, focusing on markets and trade, and pastoralism. The practical field-level collaboration between UNEP and an academic institution and the partnerships with international and local agencies with a view to establishing forums and networks is groundbreaking. It is our combined intention to demonstrate excellence in our research while promoting strong partnerships and developing institutions that were crucial in the years to come. With secession there is a crucial need for a more holistic approach to policy development that ensures not only coherent national policies, but clear links with neighboring countries, including South Sudan.

Sudan is home to one of the largest pastoralist populations in Africa. The many pastoralist groups share a culture of pastoralism and transhumance and have long co-existed with settled farming communities. Current-day pressures on pastoralism have severely impacted people's livelihoods and led to dropout and maladaptations that threaten the longer-term sustainability of pastoralist livelihoods, undermine the wider economy, and have implications for the environment in Sudan. The goal is to promote understanding and articulation of pastoralist livelihood systems amongst pastoralist leaders, civil society, government, and UN decision makers.

5.5 Areas of Further Study

Based on the observations and findings from the study, it is imperative that further research is carried out on the role of the different stakeholders in ensuring quality pastoralism output and marketing in the area. The consequences of poor quality products and unfavorable market prices should also be researched.

REFERENCES

- Ganya, C., G. O. Haro, and G. Borrini-Feyerabend. 2004. Conservation of Dryland Biodiversity by Mobile Indigenous people the Case of the Gabbra of Northern Kenya. *Policy Matters*. 13 :61-71.
- Hatfield, R. and J. Davies. 2006. Global Review of the Economics of Pastoralism. The World Initiative for Sustainable Pastoralism.
- Hodgson D. 2000. *Rethinking Pastoralism in Africa: Gender, Culture and the Myth of the Patriarchal Pastoralist*. Oxford: James Currey, Athens: Ohio University Press.
- IIED, Climate Change, Pastoralism and Biodiversity in Dry and Sub-humid Lands. Accessed at: <http://www.iied.org/pubs/pdfs/12543IIED.pdf>
- (LPPED and LPPS) League for Pastoral Peoples and Endogenous Development (Germany) and Lokhit Pashu-Palak Sansthan (India). 2005. The Role of Pastoralism in the conservation of dryland ecosystems.
- (MEA) Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Desertification Synthesis*. Island Press, Washington, DC.
- Niamir-Fuller M. 1994. Women livestock managers in the third world: a focus on technical issues related to gender roles in livestock production. IFAD, Working Staff Paper 18.
- Nori, M., M. Taylor, and A. Sensi. 2008. Browsing on Fences: Pastoral land rights, livelihoods and adaptation to climate change. IIED issue paper no. 148. Accessed at: <http://www.iied.org/pubs/pdfs/12543IIED.pdf>.

(ODI) Overseas Development Institute. 2009. Demographic trends, settlement patterns and service provision in pastoralism.

Ogutu, J., N. Bhola, and R. Reid. 2005. The effects of pastoralism and protection on the density and distribution of carnivores and their prey in the Mara ecosystem of Kenya. *Journal of Zoology*. 265:3:281-293.

Osofsky, S.A., S. Cleaveland, W.B. Karesh, M.D. Kock, P.J. Nyhus, L. Starr, and A. Yang. (Eds). 2005. Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health. IUCN, Gland, Switzerland and Cambridge, UK. xxxiii + 220pp.

APPENDIX 1

Respondents Interview Questionnaire

Dear respondent,

I am **Abul Tor Deng**, a student of Kampala International University conducting a research on the Impact of Pastrolism on Grassland, a Case Study of Gogreal county, Warrab State, South Sudan. I am requiring you to help me and give the answers to the following questions. The information gathered was used mainly for academic purposes and used by the researcher as a student of environmental science in understanding issues that matter a lot in communities and used to improve service delivery in the community. Your participation in this interview is very important though voluntary. I therefore kindly request for your honest opinions and I appreciate your cooperation.

SECTION A: Demographic and Bio Data of respondents.

Instruction; *Please tick the right option.*

Basic information:

1. Age of respondent

- i. 10-15 []
- ii. 16-20 []
- iii. 21-30 []
- iv. 31-45 []
- v. Above 45 []

2. Sex of respondent.

Male ☐

Female ☐

3. What is the marital status of the head of the household?

Single ☐

Married ☐

Separated /Divorced ☐

Widowed ☐

4. What is your level of education?

a. Primary ☐

b. Secondary complete ☐

c. Vocational complete ☐

d. Tertiary complete ☐

e. No formal education ☐

8. Do you know what pastoralists are?

a) Yes ☐

b) No ☐

9. Do you depend on pastoralism?

a) Yes ☐

b) No ☐

10. If yes, how many animals do you have in your family?

- i. 1-5 ☐
- ii. 5-15 ☐
- iii. 15-25 ☐
- iv. 25-35 ☐
- v. Above 35 ☐
- vi. None ☐

11. If none, what activities sustain your daily basic needs?

- Agriculture ☐
- Iron smelting ☐
- Others ☐

12. What is the distance from your farm to the nearest pasture grounds?

- Less than 200 meters ☐
- Between 200 & 250 meters ☐
- Between 250 & 350 meters ☐
- More than 400 meters ☐

14. Do you pay for pasture you feed your animals on?

Yes ☐ No ☐

15. If yes, how much do you pay for each visit?

16. Do you think pastoralism causes soil erosion or any form of environmental change?

Yes ☐

No ☐

17. If yes, can it be stopped

Yes ☐

No ☐

18. Do you get all your basic needs and food from livestock?

Yes ☐

No ☐

19. If yes, what other activity apart from livestock can you consider as an economic activity?

- Iron smelting
- Farming
- Shop keeping
- Other, please specify?

20. Does the climate change affect your livestock?

Yes ☐

No ☐

Time Frame

Activity	Period
December	Writing proposal
January	Typing proposal
February	Writing report
2 weeks	Data analysis, coding and interpretation
2 weeks	Typing report