IMPACT OF NOMADIC PASTORALISM ON HOUSEHOLD WELFARE: A CASE STUDY OF AFGOOYE DISTRICT, SOMALIA

BY

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DECLARATION

I am abdifatah Mohamed hassan do declare that this report on, research topic: impact of nomadic pastoralism on household welfare: a case study of Afgooye district, Lower shabelle region Somalia. Is my original work and has never been submitted to any other institution for any form of award whatsoever.

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APPROVAL

This is to certify that the research report entitled research topic: impact of nomadic pastoralism on household welfare: a case study of Afgooye district, Somalia. Has been under my supervision and is due for submission for examination.

SUPERVISOR

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DEDICATION

I dedicate this work to my parents who toiled day and night to make my study a success and whose motivation, support and guidance were of prime importance in the development of this work.

ACKNOWLEDGMENT

My sincere thanks go to Almighty Allah who gave me health and life up to this moment and enabled me to finish my study and carry out this research and I will keep on my mind that Allah will help those who obey and fulfill his order.

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ABSTRACT

The research on "the impact of nomadic pastoralism on community welfare" was carried out in afgooye district,lower shabelle Region- somalia with major emphasis placed on finding out the different activities of Nomadic Pastoralists, effects of various activities of nomadic pastoralists on household welfare and the possible ways of improving the welfare of Nomadic Pastoralists in the Afgooye district. Responses were sought through use of simple random sampling and purposive sampling for the community members and agriculture stakeholders in the district respectively. Both closed and open ended questionnaires were given to a cross section of respondents to aid and facilitate comprehensive data collection. The activities of Nomadic Pastoralists include; animal remedies, milk production or consumption, meat production, mobility, construction of underground water reservoir and animal fencing. The research findings discovered that the most effective parameters are income to the household, health for both human and herds and education level to the nomads. The study asked the respondents the best way how drought problems can be curtailed, 53.3% of the people said that construction of underground water reservoir (Berkado) is the best way to manage drought, while 42.2% agreed that digging bore holes can be a considerable strategy, and 4.4% of respondents voted for livestock banking. A common failure of past rangeland development projects in Somalia was the focus on single issues and interventions in isolation, such as addressing animal health problems with veterinary services, or addressing the under-provision of education and health services with mobile schools and clinics.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter includes the background of the study, problem statement, research objectives, research questions, scope and significance of the study.

1.1 Background of the Study

Nomadic pastoralism has a long history in many East African countries; Kenya, Tanzania, and Uganda. This is the area of the world in which we find the greatest number of nomadic pastoralists. Cattle are bred here for social rather than commercial subsistence reasons (J. Philips, 2001).Somalia has the highest proportion of pastoralists than any other country of Africa and nomadic pastoralism is the traditional basis of rural economy (UNEP, 2004), because much of Somalia land is semi-desert with few seasonal water sources and therefore suitable only for nomadic pastoralism which makes 59 percent of population who engage in nomadic pastoralism activities (UNDP, 2001).

The Afgooye district which is about 30 km from Mogadishu the capital city in banaadir region in southern Somalia most people are nomadic pastoralists, because of the low vegetation productivity and strong seasonal growth variations in the Village, the utilization of such an area often takes place through a system of nomadic pastoralism where the livestock are moved around to different locations to match spatial and seasonal vegetation growth variations, they keep large herdswhich include goats, sheep, camel, and sometimes cattle depending on the amount of rainfall received in particular area. Camels and goats play the central role as an indicator of wealth, dowry, in ceremonies and success of these people. They provide meat, milk, and transportation and also serve as pride among the community as well as source of income to many people; they sale cows, goats, and older camels to international traders and butchers in the cities. Pastoralism is the predominant means of livelihood in Afgooye district and as it is foreseeable in the future. It is livelihood which most efficiently exploits the resources of the arid climate in the village. As a result it will remain the backbone of the village economy.

Intrinsically the household way of life is a great determinant of the family members' welfare. Virtually, Nomadic pastoralism activities have a profound impact on pastoralists' welfare and greater opportunities for improving livelihoods and access to basic services such as water, shelter, and food, as well as access to education, health care, gender roles and employment opportunities are often viewed as very important to the well-being of households. As pastoral life completely depend on the keeping of livestock, their major source of income comes from selling different livestock products such as meat, milk, and hides and skins. On the other hand, these activities may also affect the psychosocial wellbeing of nomadic people as they move from one place to another in search for pasture and water for their livestock.

1.2 Statement of the Problem

Nomadic Pastoralism is widely practiced in southern Somalia particularly in Afgooye district. People's life entirely depends on keeping of livestock for products such as meat, milk, hides and skins. Animals also serve as a major sign of wealth in this community. Their lifestyle is determined by these herds that has an effect on the well-being of the community such as access to water, education, health care, employment opportunities and pastoral household economic status for example income source which is a fundamental factor of the household welfare in this community. During inconvenient time such as drought, the livelihood of these people becomes disastrous and worse. The study attempted to solve this problem by introducing alternative livelihood mechanisms to provide better social welfare and greater opportunities for improving livelihoods and to reduce the over reliance on livestock keeping.

1.3 Purpose of the Study

The purpose of the study was to examine the impact of Nomadic Pastoralism on the Pastoralists' household welfare at Afgooye district.

1.4 Objectives of the Study

- To identify the different activities of Nomadic Pastoralists in Afgooye district.

- To determine the effects of various activities of nomadic pastoralists on household welfare in Afgooye district.

- To suggest the possible ways of improving the welfare of Nomadic Pastoralists in the Afgooye district.

1.5 Research Questions

- What are the different activities of Nomadic Pastoralism in Afgooye district?

- What are the effects of various activities of Nomadic Pastoralism on household welfare in Afgooye district?

- What are the possible ways of improving the welfare of Nomadic Pastoralists in the Afgooye district?

1.6 Scope

The study was conducted in Afgooye district in a period of four months from March to June 2013. The village is 30 km from Mogadishu the capital city of the country and the study focused on how Nomadic Pastoralism has impacted on the household welfare and how to improve the welfare of Nomadic Pastoralists in the village. The researcher dealt with the local community such as Pastoralists community and local Non-governmental Organizations (NGOs) who had the required information about the study area.

1.7 Justification of the Study

Despite the fact that nomadic herders are amongst the most food insecure groups in the area, pastoral systems have received little or no attention from researchers and extension services. In studies on pastoralism in the Horn of Africa, there has been no systematic review of the past policies and programmes to address the real life of these people, and how Nomadic Pastoralism affects their lives. In fact, there has been little literature about research that examines the impact of Nomadic Pastoralism on household welfare. These knowledge gaps may sharply reduce the

chances of achieving success in pastoral development programmers. The purpose of the study was therefore to contribute to the illuminationof Nomadic life which has been neglected for quite a long time and bring a better understanding of pastoralist's traditional lifestyle.

1.8 Significance of the Study

The findings will generate knowledge and contribute to the available knowledge. Local NGOs will also use the findings and will be able to suggest ways of tackling problems that affect pastoral communities. The findings will act as source of information to make further investigation of nomads' problems and to come up with strategies to minimize the impacts of Pastoralism on household welfare.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter brings to light what has been documented about Nomadic Pastoralism, its different activities, effects of various activities of Nomadic Pastoralism on household welfare among Pastoralists and how to improve the welfare of Nomadic pastoralists.

2.2 Activities of Nomadic Pastoralism

Pastoralists are usually highly knowledgeable about the behaviour and physiology of their animals and, in many places, have developed traditional remedies for some complications, especially chronic pathogens, before gaining access to modern veterinary medicine. This is not always the case; for example, among the Luri of the Islamic Republic of Iran there is marked disinterest in the health of animals and only a limited interest in modern remedies, reflecting an underlying low investment in the health of individual animals (Black-Michaud, 1986: 50). The study of this "ethnoveterinary" knowledge of animal health and indigenous remedies has now accumulated a considerable literature (see for example; McCorkle, 1986; Mathias-Mundy and McCorkle, 1989). Somali Pastoralists society is the predominant culture in Somalia and has been in practice for centuries. The first accounts of indigenous Somali animal health care appeared in records and published papers arising from the colonial veterinary services of the Somaliland Protectorate. The information presented included details of traditional grazing practices designed to prevent or limit tick infestation and worm infection, the use of salt and minerals as dietary supplements, the treatment of wounds with salt washes, the application of cautery and traditional vaccination practices. Somali names for livestock disease and parasites were also reported at this time (Peck, 1939, 1940; Hunt, 1951; Mares, 1951, 1954a, 1954b). " it is surprising to find that the nomad recognizes the flies that spread trypanosomiasis; that he has a good idea of the infective nature of disease and knows that cattle with rinderpest are dangerous to other cattle; and that he has learnt logical and effective, though very primitive, methods of immunisation" (Mares, 1954b).

More than forty years after Mares' publications, veterinarians in southern Somalia/Lower shabelle noted virtually identical traditional practices and disease terminology to those reported

previously (Catley and Mohamed, 1995, 1996) and this was perhaps, a measure of the failure of modern veterinary services to reach more remote areas.

While veterinarians might debate the value of some traditional practices, the sustainability of these indigenous systems should not be overlooked. Many Somali remedies for livestock ailments utilize locally available plants or other resources (Hadrill, 1993) and in some cases, treatment or disease management strategies appear rational when compared with western, scientific knowledge. For example, the use of salt in wound treatments; the separation of sick from healthy stock; the avoidance of tick-infested areas. In general veterinarians have mixed opinions regarding the effectiveness of traditional vaccination against bovine contagious pleuropneumonia, as reported by Mares (1951), and according to Marx and Wiegand (1987), traditional responses to Q-fever in cattle were not effective.

Pastoral mobility refers to the time-space behavior of herds and their handlers in response to variations in pasture and the distribution of water. The patterns of mobility can be regular (in relation to gradients of grazing resources) or guided opportunistically (by herders using indigenous systems of management). Grazing mobility, with the exception of the more ordinary landscape level movements, is responsive to situations of resource scarcity (Andriansen and Nielsen 2002; Butt 2010). But pastoral mobility has never been a one-way process; rather, it entails the rotational use of spatially varied resources by diverse species of livestock. Therefore, livestock species diversity is not only aimed at optimizing production but is also designed to promote different patterns of mobility. For families managing small stock, cattle and camels, each situation requires different patterns of mobility; the choices reflected by different livestock nutritional requirements (Oba and Kaitira 2006; Roba and Oba 2009b). Whereas mobility is associated with environmental variability, traditional herd mobility might also be a result of different socio-economic levels among nomads (Bassett and Turner 2007). Pastoral herd migration takes into consideration labour scarcity and the distances moved in space and time (Robbins 1998). Migration is a trigger to reducing herd losses (Homan et al., 2008). In annual migrations, movements might include regular transhumance between key resources such as floodplain pastures and the wet season rangelands.

Pastoralism should not be seen as intrinsically expansionist in nature, but as an efficient production system of use and exploitation of a range of resources. Markakis (2004) emphasizes

the double imperative of the pastoralist mode of production, namely extensive land use and freedom of movement in order to (i) have access to dispersed, ecologically specialized and seasonally varied grazing lands and watering holes; (ii) to provide forage for different livestock species; and (iii) to afford a margin of safety against erratic rainfall. It is not true that pastoralism is irrational and destroys the environment. Pseudo-technical assertions that blame pastoralists for environmental degradation and desertification have no scientific basis.

Mobility is the primary means by which Somali Pastoralists compensate for the sparse and unpredictable resources which characterized the arid environments in which they live. It is strategy for risk aversion, crisis, survival, and a method of utilizing a rangeland poorly endowed with moisture. Also, the use of different species of livestock by nomadic pastoralists, which is common to arid environments, is based on pragmatic considerations. The practice has both ecological and economic implications. Different species utilize different ecological niches more efficiently then do single species. Resistance to drought also differs, as do reproductive rates and maturation rates (Coughenuor et al; 1985)

In Afgooye district migration of pastoralists comes in three forms. Firstly, some completely drop out of the pastoralist lifestyle and system, moving to urban centers to seek casual work or to depend on gifts from relatives, this usually happens for hard times such as when the herds are eliminated by droughts. Secondly, many move near to urban centers to seek emergency food aid. These are people who would traditionally have migrated in search of better opportunities. Thirdly, others migrate continuously for looking water and pasture for their animals. This is the most common migration among pastoralists in southern Somalia This is probably the major drive for the expansion of pastoralism, especially in the case of the southern Somalia . They move to areas of higher productivity alleviates stress on less productive or exhausted land. Conversely, if the movement of pastoralists is restricted, land that is already marginal becomes even more overused. Johnson (1975) observes that, when pastoralists make long journeys, stock deaths increase and pastoralists must weigh likely losses from the migration against comparable losses were they stay on suboptimal land.

Southern Somalia Afgooye district in particular is arid land with critical water scarcities, so the sole water supplies available are seasonal surface water (pans and dams). According to (Cossins 1971), the pastoralists built themselves the first concrete water reservoir (berkad) in Somalia in 1952 and in the southern Somalia 1956. The berkad, is a ground cistern, often cemented which approximately reaches up to 4 meters deep and 13 meters long depending on the wish and financial capability of the owners, they harvests and stores surface runoff and rain harvested water, this (Berkado) can meet water demands for livestock and human particularly in dry seasons.

The construction of the berkado may take sometimes one year or one year and half and it is actually costly. The owner generally hires daily laborers from town or from among his relatives who dig a pit with hoes, shovels and spades. Then a mason is hired to complete the stonework. Suitable stones must be available near the site to avoid large transport costs. However it is only families who have large herds can afford to have a berkad built by selling animals. In addition, Berkadoare private property, and some are surrounded by a fence with a gate locked with a padlock. To protect the water from evaporation, some are also covered with tree branches. They are used principally to water livestock during the dry season. The owner waters his own animals and may sell water to others during times of shortage. In such cases, water is measured in a barrel or in gallon containers. One barrel may cost from 5000 to7000 Somali Shillings, depending on supply and demand factors. Access to berkadwater is also based on family relationships; the owner's brothers do not have to pay for water but cousins usually do unless they live in the owner'shousehold. Relatives are only required to pay in the following year. However, in cases of emergency, public opinion would condemn a barked owner if he refused to give water to his relatives. In such a case, the community refers to the children of the relatives who would suffer from lack of water. It's clear that the private ownership of such an important watering place is still a novelty in the social relations of these pastoralists.

In many environments, Pastoralists have no sympathy with predators, and usually end up in conflict with conservation lobbies. In wide areas, still teeming with game, the nomads are enthusiastic hunters. They carry firearms at all times; the demands of pasturing takes them close to the haunts of the herbivores of the higher country; they hunt beasts of prey in order to protect their herds, and they are accustomed to taking life for meat and skin. It is most natural to turn to the herds of wild yaks, antelope, wild sheep, and gazelle when meat is, or may be, scarce, and to

hunt onager , wolf, fox, bear, and lynx for pelts, musk deer for its pods, and stag for antlers in-the-velvet, which bring high prices (Ekvall 1968). Curiously, in Somalia few pastoralists are hunters. In contrast to farmers, who often regard hunting as a prestigious activity, pastoralists view hunting as a minor activity, often focused on particular species. In Afgooye, the main focus of hunting activity is the marmot, which is not high-status game compared with large mammals. Similarly, pastoralists over much of Southern Somalia do not hunt for rainy season they hunt for dry season when their herds cannot produce the meat they need it. It has been noted the areas where pastoralists are resident suffer less from the depredations of poachers than do areas that are bordered by farming villages.

The meat and livestock industry has an important role in feeding the world's population, and slaughter, in animals not used for breeding. It is a major source of dietary protein, and on average it provides about 8% of our energy intake. However, there are immense differences between nations in the importance that meat has in the diet. For example, in Bangladesh meat and offal contribute as little as 0.7% of dietary energy whereas in Mongolia they make up 27%. The countries that have a large per capita meat consumption (about 100 kg/capita/year) are Australia, Austria, the Bahamas, Cyprus, Denmark, France, Luxembourg, Mongolia, Spain and The USA, while the nations that consume the least meat that is produced on farms (about 5kg/capita/year) include Bangladesh, Burundi, the Democratic Republic of Congo, the Gambia, Guinea, India, Malawi, Mozambique, Rwanda, and Sri lank (Neville G. Gregory 2007)

Among northeastern Somalia pastoralists, meat is normally eaten during social celebrations such as marriages, funerals, and the births of children; when an animal has died, is dying or deemed incurably sick; or during severe food shortages as a disaster food. This is clearly linked to mobility, since livestock represent a sustainable, renewable and moveable source of milk for continued consumption and sale of meat for cash that can be used to purchase a higher number of calories from grains. Small stock such as goats and sheep are most usually consumed during social events, both because of their faster reproductive cycle and lesser unit value, but also because larger animals would produce a glut of meat that could not be easily transported or stored before spoilage. Indeed, large animals such as cattle and camels are usually only consumed at a feast to which a very large social network is invited and attend, such as funerals of

very widely known and respected persons. Meat has high social and economic value and when it is consumed it is more likely to be shared beyond the family or household unit. This is important because such social events where meat is shared for consumption afford the poorest households that may not have the resources to consume their own small stock opportunities to consume a fat- and micronutrient dense food source that is normally unavailable. In sum, the data are few but indicate that among mobile Afgooye pastoralists meat consumption is infrequent even in wealthier households, and the total contribution to the diet remains modest in caloric terms (Sellen 2003). Nevertheless, the importance of meat as a source of micronutrients is potentially high and more studies of meat consumption by age and gender, and of the contribution of meat to micronutrient requirements, are needed.

Although few long-term observational studies of animal milk consumption are available, it is a core component of pastoralist diets world-wide and milk is the preferred in virtually all pastoral populations (Sadler et al. 2010). Pastoralism has certain unique characteristics. First, milk and milk products are the mainstay of the human diet and at times the very survival of the household hinges on their continued production. Second, since supplementation of cows is uncommon, milk production is a function of season rather than stage of lactation. Third, since nutritional levels are low and water may be restricted, the ability to produce milk under nutritional stress and to survive adverse climatic conditions may be more important than high yields. Finally, owing to the crucial role of milk in the pastoralist diet and society, a delicate balance must be struck between milk off take for human needs and milk intake by the calf since the calf has no access to either milk substitutes or supplements. While camels and small stock play an important role in certain societies the following general description of pastoralist milk production will concentrate on camel.

Milk is important in Somali culture. Much comes from dromedaries, of which Somalia has more than 6 million almost half the world's total. They are raised almost exclusively for their milk, and camel milk is staple food for much of the country's human population. Like in some other areas of the Horn of Africa, buying and selling camel milk used to be taboo: Somali families drank the milk from their own camels, or gave it to friends and relatives.
But the growth of cities has created a strong demand for milk among urban residents who have no camels of their own. In northeastern Somalia, an elaborate system of trading the milk has

emerged since the early 1990s. An interesting feature of this system is that milk and its marketing are managed mainly by women, even though men own the camels and are responsible for managing, milking and selling them (FAO 2007). It is the men who are responsible for managing and milking the camels, which represent the family's wealth and prestige, and are its most reliable insurance against drought. But the ownership of camels is attached to the clan structure: they are considered a corporate asset of the clan. So if a man wants to sell a camel, he has to consult other men in the clan (see also FAO 2007). Women look after the house, care for children, and manage and milk the family's herd of sheep and goats. These small livestock are secondary assets: they can be sold if the family needs cash quickly. They are not seen as clan assets: a family can decide to sell a sheep or goat without consulting the clan. Marketing tasks are divided among men and women: the men sell livestock, while women are mainly responsible for selling milk. Men milk the camels, so decide how much milk goes for the calf and how much is left for family use. This is an important role, as it decides how much milk is used to reproduce the herd, and how much to maintain the household. But once the milk is extracted from the animal, the women take charge of it. They decide how much to give to children, how much to use for other needs, and recently, how much to sell (Nori, M., M.B. Kenyanjui, M.A. Yusuf and F.H. Mohammed. 2006).

Animal fencing is common in many nomadic pastoralisms in Africa, especially in the Afgooye; this is due to the attack of livestock by the Predators in brutal manner, injuring many at a given time. In general, fence has three purposes; firstly it protects livestock from predators such as hyena and lions which are common in Pastoral areas, and secondly, in the night when most pastoralists sleep fences keeps animals from going away to the bushes makes vulnerable to the predators and thieves, thirdly, thick fences which consists branches keep hot animals from the cold (Joseph Koyie 2001). Fences are made from the thorny branches of Galool trees which form two large rings. Inside the rings, animal dung had plastered the earth, covering the thin layer of soil. When fortifying the livestock enclosures, they bury the chain-link fence two feet below the ground to prevent the hyena badgers from digging under the fence to attack the livestock. The pastoralists of this area cuts the branches of trees especially acacia tree to fencing their livestock for reason being is that the acacia has thorns which can keep away from the predators to cross easily from the traps and keeps the livestock safer. In general, fences have should be high enough to prevent egress of the species you intend to protect and large enough to prevent entry of

potential predators. However, permanent predator proofing fencing is limited when livestock are kept in large enclosures, because such as fences are costly to build and mountain (Smith and Christiansen 1991).

2.3 Effects of Nomadic Pastoralism Activities on Household welfare

Under the previous government of Somalia, the provision of animal health services to pastoralists was either free of charge or highly subsidized. Government controlled the distribution of veterinary drugs and essential drugs were, in theory, provided free of charge. In practice, the pastoralists had to pay or use unofficial channels to access these public services, while being cognizant that these services and drugs were supposed to be free. Such practices led to a degree of mistrust between livestock owners and the veterinary service providers that still prevails and hinders the provision of private veterinary services. Although free distribution has been discontinued, pastoralists remain reluctant to pay for the drugs and services provided by the private veterinarians. A major challenge for private veterinarians will be to win back the trust of the nomads (WSP, 000).

In the absence of formal animal health care services, many herders have taken to buying drugs from petty traders or village stores and treating their animals themselves, without consulting a veterinarian. As most pastoralists are illiterate they have difficulty in understanding the instructions for administering medication and are therefore likely to misuse the drugs. Sometimes they use one disposable syringe for treating hundred heads of animals, and rather than curing the animal they spread the disease. They may also treat the animals from the same area without separating the sick from the healthy ones. Thus, increased spread of diseases from one animal to another. A point to note the treating of animals without any technical assistance can lead to over dosage of the animals and consequential bioaccumulation of drugs in the body of animals often when recovery fails they end up eating meet of drug accumulated animals and in the long run they get polluted through polluted meet. Also veterinary doctors recommend not to eat any animal product under treatment from milk to meat, but to not a surprise these due to absence technical knowledge do drink milk exposing themselves to a number of health complications.

In the absence of a functional ministry or private veterinarians the pastoralists have no place to turn for help. Not surprisingly, in light of previous experience, they regard public and private veterinary professionals as opportunists who have no concern for the welfare of the pastoralists or their herds. Ironically, Nomadic and pastoralist groups are amongst some of Somalia's most marginalized people with little or no access to basic service provisions such as health care and education due to their migrating lifestyle as livestock rearing communities. They use mobility to manage uncertainty and risk (including drought, diseases, raids, insect vectors) in zones with a low net primary productivity, high inter-annual variability of rainfall and high variability in productivity ('patchiness') (Niamir-Fuller 1999). Their mobile and flexible way of life is adapted to exploiting variable natural resources and is driven by the needs of their animals.

Changing patterns of mobility affect health in two interrelated ways (C.R. Janes 2010). First, where and when people move, decisions by members of herding households to move to town and city centers, and the ability of households to develop relationships of reciprocity with town and city-dwelling kin, affect spatial and social proximity to health care services. Being close to such services, and especially having relatives who can help out when health care is needed, is an important determinant of access. Secondly, patterns of mobility which determine the success of pastoralism effective use of natural resources, access to quality pasture and sufficient water year-round, freedom to move when conditions dictate, all the while maximizing proximity to market institutions in turn have a marked relationship to patterns of risk for health and disease. In both cases availability of social resources, particularly social resources which are distributed across the Mongolia landscape, play a large role in effecting social and economic well-being. A household's level of well-being is the final common pathway determining health and access to health care. Households who can maximize social relationships, especially those linking countryside to city, while at the same time minimizing ecological and economic risks, are those most likely to experience social, economic, and biological well-being (Janes 2010).

In addition mobility and dispersion of mobile pastoralists leads to subsequent difficulties in getting and maintaining preventive and curative treatments, as well as information on health-related matters and education. Mobile pastoralist families with their animals have to avoid cultivated croplands where rural health services are typically located, which may hinder their access. Movement from place to place jeopardizes treatments, especially those requiring a long

follow-up as treatment against tuberculosis (Caselle and Galvagno 1992). The lack of maternal health services including attended skilled birth delivery is associated with a high pregnancy-related morbidity and mortality. Women's access to health services depends on the network they can mobilize to receive the necessary resources and having a male chaperone to secure treatment (Hampshire 2002). The situation may be complicated because families are periodically separated. Mobile pastoralists are prone to be the subject of misunderstandings, including the prevailing thinking that they need to settle to benefit from social services (Azarya 1996). In addition, they rarely have a strong voice to raise their demands, which also needs lead to low prioritization by policy makers and thus inadequate policies (Wiese 2004). Socio-linguistic barriers exist at rural dispensaries between nomadic groups and health workers (Loutan 1989). Pastoralists may be treated with disrespect or have to pay under-the-counter sums. Discrimination against them when drugs were in short supply at health centers has been documented (Sheik-Mohamed and Velema 1999; Swift et al. 1990). In addition the costs of mobile services were much higher than those of static facility services (Brenzel and Claquin 1994), this makes difficult of pastoralists to buy the medicine when get sick. They have to sacrifice some of their animals and sale to low price in order to cover their needs.

Ironically, mobility affects the access to education by nomadic pastoralists. The fact that they are the most disadvantaged groups as far as access to, and acquisition of, educational and other social facilities are concerned largely due to their constant migration and dispersion (Chimah, 1990). Pastoral youth represent the largest number of children in Somalia and without access to education they became powerless, marginalized, and invisible. Because of their mobility, most pastoral children in all households have no easy access to, state sponsored formal education. Girl's education in the pastoral areas is even worse off. The situational analysis of pastoralism in Afgooye district, shows that more boys than girls were attending school for various reasons; including the general thinking that while "a boy returns the investment to the home, a girl is expected to leave home to marry and to bring in bride wealth", (Muir 1994). For these reasons the only applicable form of education of these people is informal education, early in life children are taught by their parents, older relations, and peer groups how to survive and earn a living in the hostile environment usually characterized by drought, diseases, livestock rustling, and poor means of communication (Chimah, 1990; Maghimbi, 1991).

On the other hand hunting is another activity which is practice by nomadic people. Hunting is the most important way for the nomads to minimize the impacts of risk and to reduce uncertainties, or the best 'strategy for countering risks' is by hunting. The Aru in Mongolia basin has traditionally supported, and in general continues to support, an abundance of wildlife species such as chiru, wild yak, blue sheep, Tibetan gazelle and kiang. The nomads primarily hunted the chiru, mainly to obtain meat but also to trade the skins. Pelts from the chiru were traditionally traded to people from Ladakh in India, from where they were transported to Kashmir and the fine shatoosh wool was woven into high quality shawls (Schaller, 1998). They also hunted wild yaks, from which they used the meat and made shoes of the skins. Blue sheep, Kiang and Tibetan gazelle were mainly hunted for meat. Some people also used the skins from blue sheep to decorate their dresses, and some monks bought the skins because they made good material for making drums. Hunting functioned as a risk reducing strategy in two ways: On the one hand the nomads hunted so that they could reduce the capital off take of their herds, and thereby decrease the probability of falling below a minimum subsistence level if disaster struck. On the other hand, hunting was also a means of reducing the effect of disasters, in that when livestock was lost due to for example drought, they could compensate for this by hunting, and avoid cutting into the capital (Marius WargNæss 2004).

To survive, Nomadic pastoralists consume and sell milk and meat in order to manage their daily life. Animal milk has long been recognized as an important component of pastoralist diets across the world (Sadler, Kerven et al. 2009). Milkis a nutrient dense food and is thought to contribute a high proportion of the nutrients required by pastoralist people of all ages, but particularly children and women (Lindtjørn, Alemu et al. 1993; Galvin, Coppock et al. 1994; Fratkin, Roth et al. 2004; Barasa, Catley et al. 2008). Milk is widely used to feed infants and young children (Gray 1998, Gray et al. 2008, Gray 1996, Sellen 1998, Sellen 2001), although it is not clear that this results in earlier weaning of children in mobile societies versus others (Sellen et al. 2000). Milk is the most staple food of the livestock products. It is consumed as fresh and sour milk, and consumed with tea, and grain. The milk yield is determined by the quality and quantity of pasture and the lactation cycle of the milking animals. The daily consumption of milk covers the human needs of fat, protein and vitamins (Loutan, 1989). Nevertheless, the amount of intake may vary strongly due to season, place of stay and socio-economic factors and thus may make nomads

particularly susceptible to develop a vitaminoses (Swift et al., 1900; Galvin, 1992). A recent participatory study among pastoralists in the Somali region of Ethiopia found that average consumption of animal milk by children aged 1-2 years was more than sufficient to satisfy estimated energy and protein needs, and that participants perceived direct and important associations between milk intake and weight gain or loss among young children (Daniel W. Sellen 2010). In the hard times, the amount of milk decrease which leads the weight loss and Kwashiorkor. This weight loss and sickness was also linked to age. Children of 1-3 years (or sickness making them vulnerable to some diseases especially nutritional deficiency diseases like

those that have stopped breastfeeding) were thought to be particularly vulnerable and because of this, many women agreed that any milk available is prioritized for this age group. Some women suggested that older children (5 years) are often out herding the animals and so would get milk in the field. Therefore they are not prioritized for milk at home (Kate Sadler and Andy Catley 2009). Because of various factors among which availability and quality of milk is the main one, milk production varies between wet and dry seasons. The average production per household during the dry season is almost 4 liters of which one liter is used for home consumption and the remaining 3 liters are marketed (AbdiAbdulahi, Seid Mohamed, 2011). Given the average price of 15000 Somali Shillings (So.Sh) per liter during the dry season we derive that the average income of these households even during the harder times is 45000 Sh. per day, which is an average income for the household (AbdiAbdulahi, Seid Mohamed, 2011). During the rainy season, the average production is 6.25 liters and the average milk which the adapters of the new system market during this time is 4.54 liters. Given an average price of 10000 Sh. per liter during the rainy season, this shows that the average income of the family is different. The significant increase in production during the rainy season is offset by the decrease in price, which is understandably caused by the increase in supply of milk (AbdiAbdulahi, SeidMohamed, 2011). From this we learn that the increase in production is around 16% while the decrease in price is more than 30%. This shows that the supply of milk in the two seasons is price inelastic. On the other hand, the proportion of milk that is sold in the two seasons differs. During the dry season 74% of production is marketed while during the raining season 72% of the average production is marketed.

Unlike milk, meat remains a luxury and is largely reserved for special occasions. These include both times of festivity and of emergency. In fact, small stock are most frequently killed in the dry

seasons when milk is scarce, and their skins are then sold or exchanged for grain and other foods and necessities. Thus the herders tend to sell livestock and its products, not when they have a surplus, but when they are hard up. Herders drink milk in the rainy season when livestock yield much milk, and eat meat, blood and grain in the dry season when milk dries up AbdiAbdulahi,AbdulrehmanEid 2011). Both goats and camel herders, use small stock as cash animals for elastic small money besides being a source of food for home consumption. Conversely camel herders strive to keep their camels, used for transportation, milk and meat. Following the laws of supply and demand underlying market economy, herders are recommended to sell their livestock at the highest price as the rational economic behaviour. Yet generally speaking, they do not sell their livestock in the rainy season when milk is abundant. Conversely, as milk decreases with the advent of the dry season, they sell their livestock. Livestock is fat in the rainy season and lean in the dry season. When demand is the greatest and prices the highest, supplies of livestock actually declines. In other words, herders tend to sell livestock in time of depression rather than boom.

Furthermore, Nomadic pastoralists in Somalia have long history for construction of Underground water reservoir (Berkado) which is meant to be seasonal water supplies and to primarily cater for domestic use, the berkado have been converted into permanent water storage tanks earmarked both for human and animal consumption. This development is associated with the introduction of water trucking. Filled up with water taken from permanent water sources located in Southern Somalia (Afgooye), the berkado can now function almost perennially and allow permanent settlement with once again dramatic ecological impacts. The pastoralists are no longer obliged to migrate in search of water during the dry months, and often choose to remain static. This evolution of the transhumant migratory patterns towards a more settled, stable model has a tremendous impact on social, economic and political arrangements within the pastoral communities, inducing new and intolerable pressures on the local ecosystem and populations (human and animals), which depend on it (Bryden, 1994).

The development of the berkado and the attached settlement encourages further diversification of the traditional husbandry. In addition to camels and small ruminants, berkado owners start raising water-dependent cattle in this otherwise traditionally waterless camel. The cattle husbandry creates additional advantages (milk, purified ghee and adult cow for sale) to the

wealthy owners of berkado in an average year. However, this has the effect of increasing livestock population in an already populated region and puts additional pressure on a shrinking resource base. The vicinity around the settlements becomes overgrazed by cattle belonging to the villages, thus driving the poorer nomads raising camels and small ruminants in the eternal search of pasture and water (Farah, 1997:4). In addition, Range degradation and the decrease of key forage species affect the milk productivity of the herds and thus the livelihood and health of the Somali pastoralists. However, it must be indicated here again that this impact has not been documented enough. Moreover, the water quality of the berkado is low, both for animals, and human consumption. The herds of the Afgooye are said to suffer from mineral deficiency leading to a disease called Shimbir of which weakness and apathy are the main symptoms (ICRC 2005). Blocks of salt have to be added in animal troughs. Human palatability of the water harvested in the berkado, is also questioned and rarely assessed. The following type's contaminations have been observed (Gomes, 1998):

Bacteriological contamination with the presence of the water near direct sources of contamination spreading water washed diseases (conjunctivas, trachoma, scabies, skin infections, louse born typhus) and oral-faecal diseases (diarrhoea, dysentery, cholera, typhoid, hepatitis A, poliomyelitis); 15 A 200 m3 a seasonal berkado can cater for the domestic consumption of 30 to 40 families and their small stock for 2 months (interview COOPI representative, Nairobi, 3 March 2005). Impute of diesel. Since the berkado tend to become breeding grounds for mosquitoes, it is a common practice to add a slick of diesel to the water's surface. The impacts of the development of berkado on the pastoralists' livelihood are linked to the introduction of water charging and the rise of agriculture (Nathalie 2006). The impacts of water charging in the Haud, the construction of a berkado have been identified as an individual and private enterprise along with its maintenance. Most of them suffer from accumulation of silt and cracks. The cost of repairs has been estimated at 80000 Somali shillings (100 kg of cement 10000 Somali Shillings) (Farah 2001). These expenses are recovered with the introduction of water marketing both for animal and human consumption. The price of the water increases during the long dry seasons to recover the cost of water transportation. As Farah explains, the berkad acts at first as a safety net supplying regular water to the family members and the herds during the critical dry seasons. Second, investment in berkado is a lucrative commercial enterprise earning the family a significant income from the sale of surplus water to nomads during the dry seasons.

Many private investors have constructed drought-resistant "berkado" from which they sell water at high prices in times of scarcity. In the early 1970s in the Haud area, it used to cost, in dry years, the price of a whole sheep to water 175 sheep once (Sandford, 1983:10). In normal years, berkado water is 20000 So. Sh. per 200 liters barrel, but in early 2000, this price rose to 35 So. Sh, a price that drought stricken pastoralists can ill afford (World Bank, 2001: 5). On the other side, possession of a berkad has been identified as a crucial element of promoting stratification among kinsmen in the grazing region of the Haud. Availability of permanent water allows berkad owners to further diversify and raise cattle and ultimately become rich elders keeping large stocks produced partly for export. All this happens to the detriment of the non berkado owning herders and places further pressure on the fragile nomadic ecosystem (Farah, 1997: 3-4).

However a recent study, conducted by ICRC in Somalia, contests the purely private ownership of the berkado: "In berkado are owned by groups of families (10-50) forming unofficial cooperatives. Therefore, the ownership of these berkado is neither purely private nor purely communal" (ICRC, 2005). Moreover, in , a number of the communities came together as a whole to pay for water trucking and in both regions certain individuals were allowed to access the trucked water free of charge, irrespective of whether they were part of the group purchasing the water (owners relatives, caretakers, guests, travelers but also people with no stock, stray animals and orphans). In the Central region of Somalia, a tax or charge is levied for storing trucked water in the berkad (from 3 to 13 percent of the storage capacity) and used for the water given to individual free of charge (ICRC, 2005). This apparent variety and complexity of berkado ownership and management systems definitely deserves further investigation.

The construction of underground water reservoirs (Berkado) generated clashes between the two Somali tribe-families (mohamoud younis and caynaanshe younis) who were using it as wet season grazing area. Traditionally, the war between tribes was common in Southern Somalia nomadic pastoralist particularly in the dry season when water and pasture is scarce. A conflict cause loss of lives and injuries and makes difficult in the delivery of health and education facilities. Death of an immediate family member, relative or hired labour occurred when fighting over water. Death and injuries are a cost to households, for they interfere with the flow and allocation of resources for subsistence, and have high chances of initiating new conflicts in the form of revenge (Sandole D, Merwe H. 1993). In the health care, water-based conflicts interfere

with people's access to health care services and facilities. Would-be providers like non-governmental organizations, religious institutions and the private sector are kept away by insecurity. At the same time, people lack income to pay for services due to lack of access to income-generating activities. Due to insecurity, the main NGO which provides health care services in the area is unable to deliver medicines to service centers; and due to insecurity, people cannot travel far in search of health care. For the education side, conflicts affect physical access to schools and to other learning institutions. Students and teachers are unable to go to school (86 per cent) due to insecurity resulting from conflicts. In most cases, schools get closed. Teachers who come from outside the district prefer to return to their home areas whenever there are conflicts. Older students, through requests from parents, or based on social cultural and family obligations, abandon school so as to join others in "fighting the enemy." Children are forced to drop out of school when families decide to migrate to other areas in search of physical security. Once again, disruption of school leads to low levels of education, confining more and more people to pastoralism as the only source of a livelihood. The large number of people relying on pastoralism implies large herds of livestock kept. The herds require water, especially during dry seasons. As discussed, lack of access to water leads to competition and conflicts.

2.4 Ways of Improving the Welfare of Nomadic Pastoralists

The World Declaration on Education for All (EFA) in 1990 focused attention on education disparities within countries and on specific groups. The World Education Forum (Dakar, Senegal, 2000) renewed the commitment to EFA, and emphasis was placed on the low participation of groups such as nomadic communities. While attempts have been made to provide education to nomadic groups, many of these have failed. There is a view in some nomadic communities that formal education is antagonistic to their cultural, social and economic way of life as well as to their human environment. Education has been unresponsive to their needs. The lack of relevance generates a lack of interest and motivation, thereby causing low enrolment figures and high drop-out rates. This indicates that there is a need for a different curriculum – one that is designed to be relevant to nomadic life.

Krätli (2001) categorized the rationale for nomadic education into two parts, which, he posits, may work together or against each other. These are (1) the full accomplishment of the individual as a human being; and (2) the integration of nomadic groups into the wider national context. The

ways these rationales are understood, combined and pursued may vary greatly. Whereas the first part focuses on a concept of education as an essential need and a basic right with great emphasis on inclusion and empowerment, the second centers on the economic and social development of nomads. Here, the central philosophy for providing them with education is the need for sedentarisation, modernization, poverty mitigation, effective resource management and national integration. In most cases, this philosophy presupposes the assimilation of nomads into the mainstream society and economy, even though there are a few non-formal education projects that attempt "to promote negotiation and articulation rather than incorporation" (Krätli, 2001). Krätli further revealed that with few exceptions, nomadic education is geared towards transforming pastoralists into (1) settled farmers or waged laborers; (2) 'modern' livestock producers; and/or (3) loyal citizens. From the first experiments in 1920s to the mid-1980s, at the epicenter of pastoral development theories was the postulation that pastoralism is environmentally destructive, culturally backward and un-economical (Anderson, 1999). The only way for pastoralists to develop, according to these presuppositions, is to integrate nomadic way of life in education system.

Demand for education is on the rise among pastoralists. Not only among those who have been impoverished and sedentarized, but also children from households actively involved in production, which manage huge dryland areas and supply most of the domestic and export livestock market in their countries. Demand for education comes from several sources: education is seen as a way of supporting the production system, as a way out of poverty, as a way to reduce conflict, as a source of economic diversification, as an insurance against drought and in the longer run as an adaptation to climate change (David Siele, Jeremy Swift, SaverioKrätli 2011). African pastoralists are increasingly exposed to globalization and world economic trends. New technologies are becoming available. Rapid urbanization, accompanied by increasing demand from urban populations for milk and meat, is changing the economic geography of the dry land areas. If pastoralists can adapt their production system to this new challenge and everything we know about pastoralists suggests they will adapt if the legal and economic framework within which they operate is supportive the future of pastoralism is brighter than many people suggest. A crucial part of this adaptation is in the education system, and in the ability of the education system provided by the government to adapt to these new challenges. But education services to pastoralists are failing to respond to the demand, and are still generally oriented towards

educating pastoral children 'out of pastoralism'. While there is an important need to equip those who leave pastoralism to find employment in the wider economy, there is an equally urgent need for those children who are active pastoralists and will be responsible for tomorrow's animal production in the dry lands, to have access to the same education as others. In both cases the aim must be to provide a level playing field for pastoralists in economic development. Services operate on the assumption that education necessarily requires a class in front of a teacher and that this arrangement provides the service of education. However, mobile pastoralist families find it exceptionally difficult to take advantage of an educational service locked into the classroom model. Those households that want to secure access to education, for at least some of their children, have to adjust to the service and face unfavorable trade-offs. By 'giving' some children to school, productive households typically compromise on productivity by weakening both the pastoral production team, and the quality of strategic mobility. Therefore the dominant strategy of formal educational provision routinely (if unwillingly) selects out a predictable and identifiable proportion of pastoral children: those actively involved in production. The far-reaching economic and political consequences of this discrimination do not need spelling out (see also David Siele, Jeremy Swift, SaverioKrätli 2011).

"Many pastoralists have themselves asked for mobile schools, as a viable solution to meeting their educational needs. We will learn if you bring us a school which has feet, a school which can walk with us. Otherwise we cannot learn" said one pastoral elder addressing an NGO in Ethiopia. As a response to the mobile nature of nomads, many countries have experimented with and some still pursue the use of mobile schools in order to make education more accessible to them. Mobile schools have largely used specially constructed tents or temporary shade under trees or thatches staffed by nomads who move along with the community and the mobile schools during migrations (Carr-Hill and Peart, 2005). There has been substantial experimentation with mobile schools. Krätli (2001) cited such countries as Algeria (Rybinski, 1981), Iran (Hendershot, 1965), Mongolia, Sudan and Nigeria. Nigeria, for example, experimented with the mobile school strategy through a carefully designed community project in which teachers from among the pastoral communities and those who were willing to travel with them were trained for a three-year period and then deployed to teach in the schools. Similarly, there were small-scale nomadic mobile schools set up in Kenya in 1995 with a view to overcoming the exclusion of pastoralists from acquiring education. The Kenyan model used a teacher living with a family or a group of

pastoralist, of which they are a part, with a learning process designed to fit the household labour arrangements and long distance mobility (Carr-Hill and Peart, 2005). The Kenyan model recorded the enrolment of almost 6,000 pupils between 1995 and 1999 (Hussein, 1999 as cited by Carr-Hill and Peart, 2005).

The mobile school structure seems to be more suitable for people who live nomadic lives, at least while children are still young. Village schools demand a settled life and thus, require a reorganization of communities, their livelihoods and ways of life. Mobile schools do, however, require sufficient funding both in order to get well-qualified teachers and to be able to provide the necessary facilities for both teachers and pupils. In the case of mobile schools the teacher move with the communities and the school facilities are moveable. In this sense the school is adjusted to a nomadic way of life and the movement of nomadic communities and thus, formal education does not appear as a contradiction to a nomadic way of life, as in the case of village schools. Mobile schools are also 'multi-purpose schools', which means that included in the curriculum is also teaching related to, for instance, matters of health-care, nutrition and para-veterinary. Moreover, in the schools children belonging to different age groups and who have reached different educational levels participate in the same class. This is important in nomadic communities because of their emphasis on equality and the notions that acquired skills follow age-groups and, hence, not individual achievements. Given this situation, mobile schools should be provided for children between level one and four, while from level five the children should, given the increased complexity of the curriculum, have access to boarding schools (Gorham 1978). Mobile schools require motivated and well-trained teachers. On the one hand, teachers should be able to accommodate education and the transference of a curriculum to a nomadic, pastoral society, where, in most cases, formal education is not yet perceived as an integrated part of children's life. On the other hand, the teacher should be able to teach in subject that is not usually part of the formal education system such as health-care, nutrition and para-veterinary issues (Ezeomah 1990).

Given their lifestyle, systematic surveillance data on the health status of nomads are practically nonexistent. Most information is based on specific, often small-scale studies each providing a small part of the overall picture (Imperato 1975). In general, nomadic and settled populations in rural Africa are subject to the same kinds of health problems but the frequency of occurrence of

specific diseases may greatly differ between nomads and settlers. Nomads appear to be generally healthier than their settled neighbours, but have much less access to health care, safe drinking water and formal education. Nomads are often at a disadvantage for receiving health care. In Somalia, for example, the national health plan (1985–90) recognized that 90% of nomads were out of the reach of the national health services. In central regions where inhabitants are mostly pastoralists, there were 5000 inhabitants per hospital bed, while for the settled population in Benadir region this ratio was 350 inhabitants per bed (Nat. Health Plan 1985–90). Disease control programmes often fail to reach migratory populations. Imperato (1974) describes how over a period of 50 years successive forms of health services failed to have an impact on the health of nomadic populations in francophone Africa. Even today, the Expanded Programme of Immunization (EPI), despite massive assistance from the international communities (technically and economically) for two decades (Daffluijsen&Velema 1995), still does not have access to the nomadic communities of Africa. Dao and Brieger (1994) found that only 2% of Fulani preschool children had received full childhood immunization compared to an estimated 40% of all children in the same area. Another study among the settled and nomadic Rendille in Kenya revealed that all children over 12 months of age in Korr village had full immunization coverage, while among their nomadic counterparts immunization coverage was zero (Nathan et al. 1996). The absence of antibodies against measles in a large proportion of the nomadic populations mentioned above (Loutan&Lamotte 1984; Loutan&Paillard 1992) does not show us only that transmission of disease is very low among nomads but also that nomads were not exposed to vaccines. Despite the effort of international organizations and national governments, immunization coverage, a major indicator of health service delivery, shows that the current (conventional) health system has no access to nomads of sub-Saharan Africa and that they form a pool of susceptible populations where an outbreak of communicable disease can occur at any moment. Similarly, the Guinea worm eradication campaign was very successful in reducing the number of endemic villages in the world from over 23 000 in 1992 (Hopkins et al. 1993) to about 9500 in 1996 (WHO 1997) and the number of reported cases from an estimated 3 million in 1986 (Hunter 1997) to about 152 000 in 1996 (WHO 1997). Despite this, the campaign was much less successful in reaching nomadic populations. 95% of the remaining cases of Guinea worm disease in Uganda in 1997 are generated by the two districts inhabited by seminomadic pastoralists (Henderson et al. 1988). In a study of Guinea worm among the Fulani in Nigeria, Briegeret al. found that 25% of their settlements had at least one confirmed guinea worm case during the

study period, but that these were not reported in the surveillance records of the Guinea worm control programme in the area. The health staff was not even aware of this, and the Fulani elders stated that they never benefited from the local health or other social services (Briegeret al. 1997). Health services are usually in the hands of settled populations which do not relate well to nomads. Tensions between pastoralists and agriculturalists have existed from the earliest times as signified by the biblical story of Cain and Abel.

Farmers of all times have defended their crops against the destructive effects of passing herds of cattle. Many nomads used to obtain food, animals and slaves by raiding their farming neighbours and this is a cause of distrust and dislike (Imperato 1974). Settled people tend to look down on pastoralists as uneducated and primitive or 'wild'. In reality pastoralists have adapted their lifestyle to the harsh circumstances they live in and have all the skills necessary to survive there. For many governments, the fierce independence of nomads poses a problem as they are difficult to control and resist any attempts in this direction, sometimes violently. Cultural and political differences thus hamper the contact between nomads and health workers in curative as well as preventive and promotional work. Besides cultural barriers, one obstacle to providing health services to the nomadic populations is the prohibitive cost. During smallpox eradication in Mali, mobile teams visited all nomadic camps, using wells as focal points; the cost per nomad immunized was 11 times higher than that for settled individuals due to increased fuel and staff time (Imperato 1974, 1975). Similarly, in Botswana the cost of mobile medical teams for nomads was 8 times more for the same degree of effective care provided at a dispensary (Selden 1986). In Niger, the results of using mobile teams for delivery of health services to the pastoralists were unsatisfactory and ineffectual (Ailou 1992). Efforts have been made to deliver immunization at markets on market days (Imperato 1969). This was manageable for smallpox eradication, but is unlikely to yield an effective coverage since many mothers and children do not attend the markets frequently.

The general conclusions from the study of nomads by Chabasseet al. (1985) were that improvement of Nomad health would depend on availability of more and better-quality water and on better access to health services. Opinions differ as to how health services to pastoralists may best be organized and delivered. In north-west Somalia, Bentley (1989) suggested that nomads will have to wait until all villages in the region are covered by the PI-IC services, so that

nomads can reach services at all times of their movement cycle. In the Sahel, Imperato (1974) conducted mass campaigns through mobile units as a temporary measure until permanent services could be set up, emphasizing the need to dissociate health workers from government administrators. SaniAilou states: 'It is possible to organize primary health care (PHC) services for nomads. The services should be capable of mobility matching that of the community they serve. They should establish seasonal circuits in accordance with the local patterns of population movements. Integrated fixed and mobile activities should be carried out in each defined operational area' (Ailou 1992). Omar puts emphasis on setting up PHC programmes for nomadic populations, especially in countries with limited resources and large nomadic communities (Omar 1992). Community participation is crucial for PHC programmes. Imperato (1974, 1975) found that involving nomads in their health care was difficult. They were highly suspicious of anything connected to government, feared tax collectors, and avoided gathering in any numbers for the same reason. By contrast, Bentley suggests that simple outside contacts and regular provision of essential drugs and supplies can be sufficient to motivate communities to help themselves (Bentley 1989). In Somalia, perception and participation of the community in PHC programmes was better among the southern pastoralists than the southern agriculturalists (Dualeh 1987). In north-east Uganda, one Karimojong pastoralist community successfully manages its own clinic employing staff selected from their midst and using the proceeds to finance small-scale development activities (personal observation).

The problems of delivering primary health services and primary animal health services to pastoral communities are similar in terms of poor infrastructure, mobility of target communities and the reluctance of professionals to work away from large towns or cities. When discussing primary health care provision to pastoralists in southern Somalia before the civil war, Helander (1990) noted the failure of the public sector to provide adequate services and the rapid expansion of private pharmacies from urban to rural areas. The demand for health services from pastoralists prompted "an enormousenterprise potential in the form of privately organized health care". Some of the private pharmacies developed into complete health centres by cooperating with local health workers and in some cases, opening small diagnostic laboratories. These pharmacies appeared in many rural towns and were used by pastoralists when they visited livestock markets. In terms of improving official primary health care systems, Helander advised integration of the numerous drug traders and private pharmacies with primary health workers and traditional

healers. There is an increasing body of evidence from dry land areas of the Horn of Africa that community based services can provide effective animal health care for pastoral communities. These community based services have led to emergence of community based animal health professionals (Community Animal Health Workers). A Community Animal Health Worker (CAHW) is a part-time animal health worker who ideally, owns livestock and in the case of pastoral communities, is able to travel with herds to remote grazing areas. The CAHW aims to treat diseases which are prioritised by the community. Although for many years there was very little data on the impact of CAHW projects, recent evaluations in southern Kenya have demonstrated high cost-benefit of the community-based approach in dryland areas (Holden, 1997a; 1997b). CAHWs were also a crucial factor in the eradication of rinderpest from the Afar Region of Ethiopia and reduced rinderpest outbreaks in southern Sudan (OAU/IBAR/PARC, 1996; 1997; Jones et al., 1998).

Although used initially by non-governmental organizations in the1970s on a relatively small-scale, community-based animal health systems now cover a substantial area of southern Sudan and are found in pastoral areas of southern Kenya, north-east Uganda, the Afar region of Ethiopia and southern Tanzania (Catley et al., 1998). Veterinary service reform in these countries and increasing privatization of clinical veterinary services has also prompted interest in combined community-based and privatised systems in pastoral areas (Leyland, 1997) and policy debate on the need for official recognition of community animal health workers (CAHWs) is in progress in some countries. CAHWs also continue to play an important role in rinderpest eradication in pastoral areas that are inaccessible to conventional government veterinary services. This activity was made possible by the development of a heat-stable rinderpest vaccine that can be used by CAHWs without the need for extensive cold chains (Mariner et al., 1994).

The role of the CAHW can vary. Some communities will want their CAHW to diagnose and treat diseases. Other communities feel more confident in their own ability to diagnose disease and may want a CAHW mainly as a source of veterinary drugs and advice.

Community Animal Health Workers (CAHWs) are appropriate where

- In areas where a government or private veterinary service does not exist. For example, the area may be a war zone or recovering from conflict.

- In areas where a government or private veterinary service exists but does not extend into more remote or marginalized areas. Commonly, veterinary services are restricted to urban centers.
- In areas where livestock owners prioritize animal health and are willing to pay for veterinary medicines. Payment may involve sale of livestock.

The interrelationships between pastoralists and their livestock are far reaching. Transactions of property, services, and social events are related to livestock exchange. Livestock is the basis of economic wealth and social respect, and is the main source of income and nutrition (Majok and Schwabe 1996). Majok also argues that because of the paramount importance of livestock to pastoralists, breeding practices are taught to youngsters and the recognition and treatment of different livestock diseases are later learnt from elders. Knowledge of human diseases is not accumulated equally systematically, and only few members of the community acquire specific skills in treating people (Wiese and Tanner 2000). Traditional healers in many pastoral societies work with both people and animals, but their role and importance vary across different ethnic groups. The American epidemiologist Calvin Schwabe (1984) focused his attention on the commonality of human and veterinary health interests. He discussed the added values to public health of 'one medicine' in a broad range of fields such as food and nutritional security and mental health. Majok and Schwabe (1996) and others (Ward et al. 1993) advocated inter-sectoral collaboration between the health and veterinary services. The more recently evaluated institutional collaborations in the context of a 'one medicine' approach seek to identify appropriate control strategies for zoonotic diseases, and to strengthen systems by proposing new health services for remote livestock holders, while better using existing resources (Schelling et al. 2005b; Zinsstag et al. 2005). In recognition of the mutual interdependence of humans, animals and their ecosystems, comparable unifying concepts and institutional developments have emerged. For example, 'ecosystem health' sees sustainable development expressed as the mutualism of the health of humans, animals and the ecosystems in which they co-exist. This extends the concept of 'health' to that of the whole ecosystem (Forget and Lebei 2001).

Livestock can be victimized by climatic anomaly that is to say droughts. This has different impacts on herders. Droughts are cumulative, and the gradual realization that a drought is in progress causes pastoralists to move their animals rapidly in search of more favorable conditions. As a consequence, animals die slowly the weaker ones first - and are often sold in advance of likely death in order to realize some profit (Wood, A.P. 1976). Droughts, or periods of unusually low rainfall, are part of the expected pattern of precipitation in semi-arid Africa, and in the past the common response of pastoralists was to move to areas with higher rainfall where vegetation persisted. This was no more than an extension of typical intra-annual seasonal movement in which pastoralists cluster in more humid regions during the dry season, moving to drier zones when the rains begin and they can take advantage of the new grass. Pastoralists vary in their willingness and capacity to move, and those that shift rapidly and for long distances in response to a coming drought are more likely to conserve their herds. Contributors to Gallais (1977) show that, in the Sahelian droughts of the early 1970s, nomadic pastoralists survived better than their agropastoralistneighbours because they move their herds long distances. The consequence is that droughts now cause significant humanitarian problems and localized degradation, since large numbers of animals converges on certain pastures, especially around wells. This, in turn, is responsible for long-term impoverishment among pastoralists, since they must sell animals cheaply and cannot afford to buy them back when the drought ends. At the same time, it places extra stress on already ineffectual veterinary services, since weakened animals are more susceptible to pathogens. These cycles are increasingly understood by national governments, international agencies and non-governmental organizations (NGOs), with the result that effective mechanisms to deliver relief supplies to affected pastoralists are generally in place. This, however, has led to the perception that drought is essentially a humanitarian problem. As a result, policies that deal with the long-term consequences and try to prevent the cycle from simply repeating itself are inadequate. There is considerable historical evidence that pastoralists who could not succeed in difficult climatic conditions or who lost their herds through disease simply left the agro-ecological zone and became settled farmers or traders. This was a brutal but effective mechanism for reducing pressure on resources. However, the provision of food aid has the effect of keeping in place populations who would otherwise move and initiate a new subsistence strategy (Toulmin, C. 1987).

All over Africa, improved water supply has been seen as the solution to evening out the variability in precipitation that leads to periodic crashes in livestock numbers, because it makes pasture in waterless regions utilizable. Arid rangelands have generally been the object of extensive well and borehole implantation which has encouraged herd expansion beyond the capacity of rangelands to support them. In the Somali region, a strong distinction is made between water from natural sources (gall, saha) and water that is accessible through wells (el, sur), boreholes, artificial basins (war) and cisterns (birked). Natural depressions are accessible to all members of the section owning the land. In all other cases, the resource is controlled by the groups responsible for maintaining it. In recent times, individual ownership has begun to supersede collective ownership, and controlled water resources are seen as a source of cash income. As well as external programmes, Somali areas in particular have also been the recipients of local investment to build groups of berkeds, that is to say cisterns, around which settlements often develop (Sugule and Walker, 1998). The growth of these has been phenomenal since the mid-1980s. At the same time, new wells and boreholes have been constructed throughout Somalia. Some well owners also have tankers and sell water to pastoralists in remote pastures.

Such developments have several consequences; they increase sedentarization, and thus break down the traditional pattern of seasonal migration between dry- and wet-season pastures. Unlike camels, cattle and small ruminants cannot be away from a water point for more than two days without serious health consequences. The expansion of water points therefore also encourages the herding of sale-oriented species, notably cattle. Cisterns are often associated with range ex-closures and privatization, thereby altering the open access pasture system. The present responses to drought, and the policies of governments, agencies and NGOs, focus on restocking and sedentarization. Restocking can work on a local scale, although it is expensive in terms of management and seems to provide no evident insurance against further droughts, which on average seem to occur every ten years. Pastoralists themselves tend to insure against individual risk by dispersing animals to other herds; this is effective for individual herders, especially as protection against epizootics, but does not remove animals from the system. Unless there is more effective strategic thinking about the long-term consequences of present drought response strategies, the cycle of crises is likely to continue.

Livestock banks that are similar to cereal banks have been proposed as a way of assisting producers to carry stock across difficult seasons. Livestock banking proposes that the expense of restocking can be spared if, during parts of the year, animals can be traded into an independently owned "bank" in return for a token. The animals are then tended until such time as the pastoralist decides to redeem them. There is, however, a fundamental asymmetry between grains and animals, in that only the latter require feeding. This, in turn, demands a responsible, disinterested and well-established organization to function as a holding operation for the stock, and this seems politically unfeasible. A system in which animals are fed at the expense of the government during the hardest parts of the year, when grain is scarce and expensive, seems improbable. It is not evident how such schemes would be able to fund the feeding of livestock when the pastoral system has proved incapable. Goldschmidt (1975) proposes a National Livestock Bank for Kenya, which would make sense if livestock planning were conducted according to very strict economic criteria. Such ideas have never been put into practice. Other alternatives might include simply turning the animals into cash and then buying them back when prices are low. This would undoubtedly be effective for individuals who see a drought coming, but would cease to work were it adopted by more than a small fraction of the pastoral community. This, of course, is what livestock traders do all the time, speculating in animals as well as simply directing slaughter stock to the abattoir, and livestock producers generally despise them for it instead of imitating their model. Livestock insurance is yet another common proposal that, despite its apparent attractions, has never been put into practice. The transaction costs of both registering animals and insuring against fraud seem to be too high to make the scheme workable, even assuming pastoralists were willing to pay money up front for an eventuality that might not occur.

As markets expand, so do opportunities for pastoralists to sell livestock and add value to products from herds (FAC 2011). Pastoralists are generating significant new income from these linkages, feeding into processes of commercialization in the region. There is a need for policies to support the participation of pastoralists in markets to strengthen their livelihoods alongside targeted measures to support those who are being left behind (for example safety nets, provision of skills and training to make new sustainable livelihoods outside of livestock-keeping for drop-outs) (Lind, Jeremy 2010).

In the southern Kenya/southern Ethiopia borderlands, a vibrant and lucrative camel market is on the rise herders, traders, brokers, and other market actors stand to gain (, Hussein Abdullahi, 2010). Though the benefits from these emerging commercial channels are potentially enormous, market actors will certainly profit differently along the trade chain. Pastoralists are already market actors but their gains depend on a variety of conditions. Mahmoud also argues that the role of market brokers is crucial in linking herders with traders; some take advantage of the complex trading chain to exploit herders excessively. Generally, the camel trade in this border area is seen as one of the most beneficial to most market participants, including herders. Pastoralism in the Somali region of Ethiopia has been transforming for some time and the rapid growth of economic activity around small towns is one manifestation of how the region is changing (Hussein, AbdullahiAbdi, 2010). One innovation spreading widely is the sale of camel milk in towns at scale. Herds of camels are becoming commonplace around towns as herders tap into town markets. And as towns become more important in pastoralist production systems, some herders and towns people are also producing fodder on enclosures on the outskirts of towns to sustain 'town camels' as well as livestock brought for sale. This is another example of how poorer pastoralists residing in towns are responding to processes of livestock commercialization by exploiting a market niche for livestock products.

Sedentarisation of nomadic pastoralists, that is, the shift away from a predominantly mobile form of existence to a more sedentary one, is an undeniable trend characteristic of the late 20th Century. According to Salzman, 'processes of sedentarisation are often natural responses to constraints and opportunities in the physio-biotic and sociocultural environments' (Salzman, 1980). Sedentarisation is viewed by some as a natural consequence of development and progress. Governments in many parts of the world have long thought of pastoral nomadism as an archaic form of production 'that would vanish with economic development' (Barfield 1993: 126). Yet, not only does this livelihood continue among 30 to 40 million people in the Middle East, Central and Inner Asia, Africa, and the Far North (Khazanov 1998: 7), but nomadic pastoral communities often make a significant contribution to national economies through the exploitation of otherwise unproductive and marginal lands.

The traditional lifestyle of nomadic pastoralists freely moving with their herds is under threat worldwide and rapidly disappearing due to many reasons. These include human population

growth and the associated pressure that it has on grazing land as well as political and economic pressure (Fratkin, 1997; Homann et al., 2004; Desta and Coppock, 2004). More and more cattle keepers have adopted a sedentary lifestyle and are practising mixed crop-livestock farming and deriving livelihoods from other non-pastoral activities (Nduma et al., 2001; Fratkin and Mearns, 2003; McCabe, 2003; Homewood et al., 2006). This is also the case for the Bahima pastoralists of Uganda who are keeping the long horned Ankole cattle (Wurzinger et al., 2005). Sperling and Galaty (1990) reported that starting from the 1950s onwards a trend of seeking jobs, at least seasonally, outside the pastoralism production system can be observed. Also Zaal (1999) reported that there is an increasing number of part-time pastoralists. Nowadays, even small towns offer some possibilities for investment in transport services, small-scale restaurants, or petty trade in groceries and dry goods. However, other than pastoral tribes used to be involved in commerce. They mostly outmatch pastoral people in this matter (Sperling and Galaty, 1990).
Politicians support sedentarisation because they want to enforce development pastoralism is often seen as "backward". Many policy makers think settlement is the condition for development. Settlement is seen as a principal requirement for building schools, markets, clinics, cattle dips, and veterinary centres (Iro, 2001). Another motive is to exert more political control.

NEMA (1996) states that the Ugandan government policy has tended to emphasizes notarization of pastoral communities through increased water development and social infrastructure. In addition, land was offered increasingly for sale, although pastoralists rarely made use of it. On the other hand, very little effort has been made to improve the production conditions of pastoralists (NEMA, 1996). Interestingly, pastoralists are not contrary to the popular, romantic belief in many Western countries that enjoy moving so much. Three-quarters of the mobile Fulani report that herding is not only toil some; it is becoming more strenuous (Iro, 2001). In Uganda, leaving the district and crossing borders also often leads to cattle rustling and violent conflicts (NEMA, 1996).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design; data collection techniques, sample selection, data processing and analysis.

3.2 The Research Design

A case study research strategy was used to determine the impact of Nomadic Pastoralism activities on household welfare. The case study research strategy was used in this study because of the fact that "the case study method allows the researcher to retain the holistic and meaningful characteristics of real-life events." (Kohlbacher January, 2006). Afgooye district is an area that Nomadic Pastoralism is the major land use activity. Qualitative and Quantitative methods of data collection were used to collect data. The research design used self-administrated questionnaires to gather the necessary information. The following variables were investigated during the study: Nomadic pastoralism, its impact on household welfare, what can be done in order to improve the welfare of Nomadic.

3.3 The study Area

Afgooye or afgoi district is situated about 25 kilometers west of Mogadishu, the nation's capital. The Shebelle River passes through the middle of the town. And also it is located at 2.1381 [latitude in decimal degrees], 45.1212 [longitude in decimal degrees] at an elevation/altitude of meters. The average elevation of Afgooye, Somalia is 87 meters. Afgooye is thirty kilometers far from the capital city of Mogadishu and is a very strategic town that joins many regions to the city. Afgooye district consists of three sub-districts named 21 October, Dhagahtur and Hawa-tako. The living condition of Afgooye population depends on Agriculture and livestock. The district is currently hosting thousands of IDP communities Affected by the armed conflict in 2012.

3.5 Sample Size and Selection

The study used a total of 45 respondents of which 35 community members were selected from Afgooye district; the remaining 10 respondents were local community leaders, Government officials like district veterinary officer, District environmental officer, District agricultural officer and NGOs representatives. The study used both random and non-random sampling techniques in selecting the sample size (respondents). Simple random sampling was used to select 35 respondents among community members in Afgooye district. Simple random sampling was used because the study population is small and homogeneous, and to avoid biasness as it ensures that each member of the study population has an equal and independent chance of being included in the sample. Purposive non random sampling was also used to select 10 informative respondents who understand well the topic and area under study. Purposive sampling helped to provide useful information which increased the credibility and reliability of the study. It also saved time and money.

3.6 Data Collection Procedures

Self-administrated questionnaires were employed during the study. A logically designed set of questions was used to answer the research questions in relation to the set study objectives (Appendix 1). The questions were close-ended in nature and were designed in line with the following variables: Nomadic pastoralism activities, their impact, and ways to improve the welfare. The questionnaires were used to collect data from respondents; the researcher assisted the illiterate people in answering the questionnaires by interpreting the questions in questionnaires and recording data. The questionnaires allowed the researcher to collect lot information over a short period of time.

3.7 Data Analysis

Qualitative data collected was analyzed using tabulation. The approach was employed; after the gathered data through questionnaire was coded and organized for consistency, accuracy and effectiveness and the results were computerized using SPSS. The synthesis of the qualitative data was compiled through the research in order to create a general profile of the impact of Nomadic Pastoralism on household welfare. The main analytical strategy based on the original objectives and research questions of the study to identify some causal links that were analyzed after.

3.8Ethnical consideration

The researcher carried out this research with full knowledge and authority from Nomads in Afgooye district, assurance of the confidentially of the obtained information was exhibited in the critical process of collecting and coding data, better still objectivity as principle of research was paramount to control bias and distortion of information. The researcher got an introductory letter from College of Applied Sciences and Technology of Kampala International University for introducing him to the field so that he may not be doubted by the respondents.

CHAPTER FOUR

PRESENTATION OF FINDINGS AND DISCUSSION

4.1 Introduction

This chapter covers data presentation, analysis and discussion of findings. It mainly summarizes key issues from the theoretical and empirical literature, compares and contrasts findings systematically and possible relationships in the process of fulfilling the overall objectives of the study. The analysis was done in accordance with the research objectives and variables of the study. The variables under study were nomadic pastoralism and household welfare. Therefore, the researcher used various tools to analyze the data collected including; frequency distribution tables. A descriptive analysis was also employed to enable easy understanding of the information given by various respondents.

4.2 Demographic characteristics of respondents.

This section presents the socio-demographic information of all respondents. These include: gender, age, and level of education, occupation and marital status. The findings are shown in the tables below:

Table 1: Gender of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	29	64.4	64.4	64.4
	Female	16	35.6	35.6	100.0
	Total	45	100.0	100.0	

Source: Field Data 2013

The table above indicates that 64.4% of the respondents were males whereas 35.6% of the respondents were females.

The researcher observed that with a greater percentage of the respondents being males it implies that males were more ready and more reliable to provide the information during the study.Females were busy in daily activities of nomadic family and household work. It also depicts a form gender inequality common in most areas whereby women are supposed to disclose any household affair without husband's notice.

Table 2: Age of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-28	16	35.6	35.6	35.6
	29-38	17	37.8	37.8	73.3
	39-48	8	17.8	17.8	91.1
	49 and above	4	8.9	8.9	100.0
	Total	45	100.0	100.0	

Source: Field Data 2013

The table 2 above shows that the majority of respondents 37.8% and 35.6% were in the age brackets of (29-38) and (18-28) years respectively, the age bracket (39-48) and (49 and above) years were 17.8% and 8.9% respectively. Few elderly people were involved in the study (8.9%). This may be because the people aged 29-38 and 18-28 years are the one who mostly engage in Nomadic activities in the village than the elderly people who normally stay at home, so it was much easier for a researcher to interact with the people aged between 18 and 38 years than the elderly people.

Table 3: Education level of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	primary level	14	31.1	31.1	31.1
	secondary level	8	17.8	17.8	48.9
	Tertiary level	7	15.6	15.6	64.4
	None	16	35.6	35.6	100.0
	Total	45	100.0	100.0	

Source: Field Data 2013

Research also revealed that there is a variation in education levels among pastoral communities. 35.5% of the respondents had not accessed any form of formal education while 31.1% of respondents had acquired primary education and 17.8% and 15.6% of the respondents had

attained secondary and tertiary education respectively (table 3). Judging by the percentage of interviewed nomads with no formal education, it implies that many nomads may not be able to read or write, which tends to limit their access to required information especially about how pastoral activities impact their way of life. Such situation requires an exhaustive preparation from designated government and non-governmental organizations to bring about awareness and educate these people.

Table 4: Marital Status of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	married	22	48.9	48.9	48.9
	single	13	28.9	28.9	77.8
	separated	5	11.1	11.1	88.9
	Widow	5	11.1	11.1	100.0
	Total	45	100.0	100.0	

Source: Field Data

The table above indicates that 48.9% of the respondents were married, 28.9% were single, and 11.1% of respondents were separated and 11.1% were window.

Table 5: Occupation of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business person	9	20.0	20.0	20.0
	Religious leader	4	8.9	8.9	28.9
	Community leader	7	15.6	15.6	44.4
	House wife	4	8.9	8.9	53.3
	Herder	21	46.7	46.7	100.0
	Total	45	100.0	100.0	

Source: Field Data

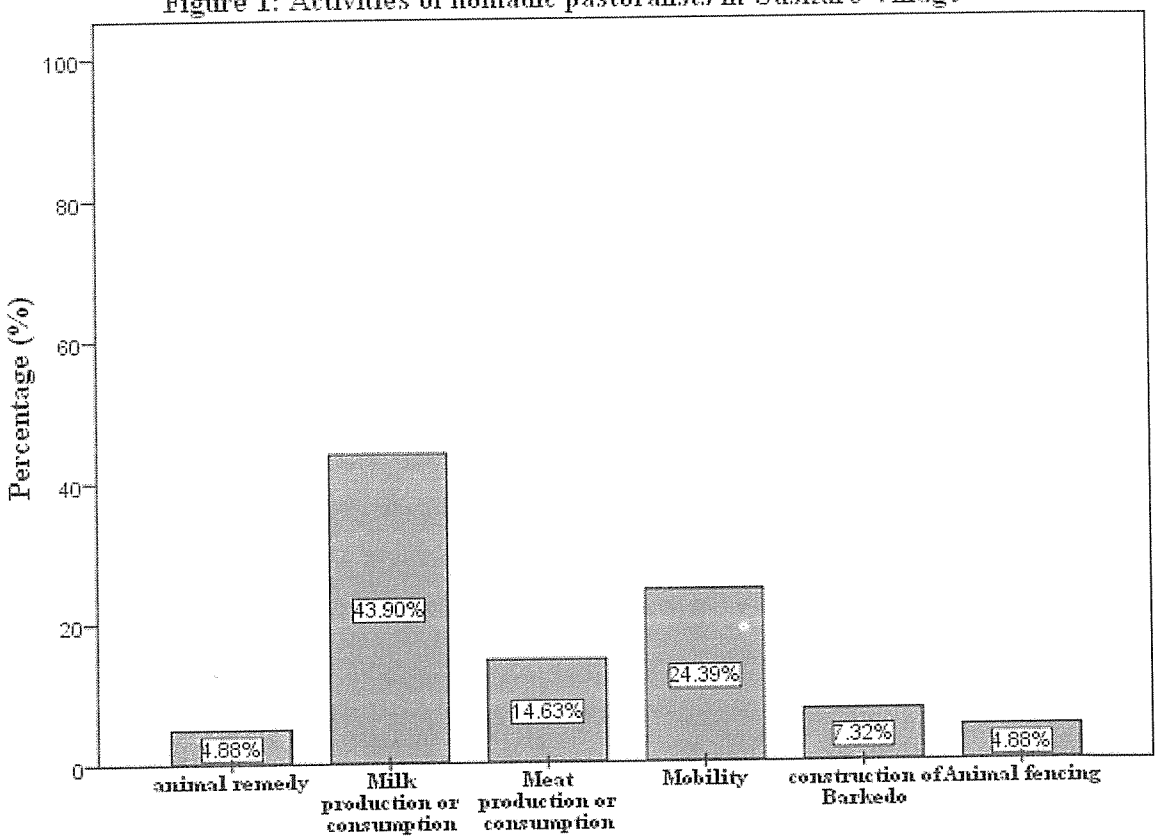
The researcher interviewed different people who had different positions. The above table shows that 46.7% of respondents were herders, 20% were business persons and 15.6% of respondents were community leaders while religious leader and house wife represent 8.9% each. Herders as occupation has the majority and this implies that most of the people engage in nomadic activities like animal remedies, mobility, and hunting.

4.3 Nomadic Activities

The research findings revealed that 95.6% of respondents in Afgooye district practice nomadic activities. 43 out of 45 respondents replied 'yes' answer to the question whether they practice any nomadic activities. They engage in different nomadic activities such as animal remedies, milk production or consumption, meat production, mobility, construction of underground water reservoir and animal fencing.

Figure 1: shows that 43.9% of the people in Afgooye district practice milk production and consumption while 24.4% involve in mobility, and 14.6% and 7.3% of respondents were involving in meat production/ consumption and construction of underground water respectively. 4.9% and 4.9% of respondents practice animal remedy and animal fencing respectively.

Figure 1: Activities of nomadic pastoralists in Uuskure Village



Source: Field Data 2012

Milk production is very important to nomadic pastoralists in Afgooye district for consumption at household level because milk products are the mainstay of the human diet and at times the very survival of the household. This agrees with (Sadler et al. 2010), milk is a core component of pastoralist diets world-wide and milk is the preferred in virtually all pastoral populations.

In addition when nutritional level is low during water scarcities, milk serve as staple food for these people. The study findings revealed that most nomads believe milk contributes a high proportion of the nutrients required by family members of all ages, but particularly children and women. Mobility comes second as an activity engaged in by nomadic pastoralists in Afgooye district with 24.4%. This is very important to them as a response to scarcity of resources such as water and pasture. The geographical landscape of the village is arid land where rainfall is sparse and the availability of water and pasture depend on the amount of rainfall that a particular place has received in particular period of time. Mobility also comes as way of escaping uncertainty and risk such as drought and diseases which break out the settlement areas. As it is evidenced in

(Andriansen and Nielsen 2002; Butt 2010), Grazing mobility, with the exception of the more ordinary landscape level movements, is responsive to situations of resource scarcity. The first and most obvious response to drought is to move the animals to areas where there is still pasture and water.

About 14.6% of the nomads involve in meat production and consumption, meat is a major dietary protein and provides energy intake. The majority of the community who involves in meat consumption eats during social celebrations such as marriages, funerals, and the births of children. They believe that the best thing you can do when one invite someone is to give him/her meat especially camel and goat meat. Meat has high social and economic value in this community and when it is consumed it is more likely to be shared beyond the family or household unit. The study found that meat consumption is frequently in wealthier families who have large herds around (500-700) herds though less frequent in herders below 500 herds. Conversely, some nomads sells their animals to the slaughter or butcher places so that they can earn money to cover the other needs of family such as rice, flour and sugar, etc. others they sell to the hawkers to nearby trading centers who buy and export to the Gulf countries mainly Saudi Arabia, but all these consist male herds as not allowed to export female herds to the abroad.

Construction of underground water (berkado) is practice by 7.3% of nomads in the village. The village is arid land with critical water scarcity and the only available water sources are dams and ponds which dry up during the dry season, but underground water reservoir can last even for long dry season. However, the construction of berkado its not common to all people in the community since its building involves high expense and those people who can afford can construct, and this might be the reason why it has a small percentage among pastoralists of this village. The findings observed that those who owned the berkado have high privilege than those who do not have, they lock berkado during the wet season when other sources of water are available such dams and ponds, they open and sale water in dry season usually at a higher price.
In addition "they not only take money sometimes they exchange water with livestock making them to have more herds than their counterparts who do not have berkado" said MohamodAbas one of the respondents.
Access to this water may base on family and individual relationship, for example sometimes when rainfall fail to come in the expected time, water may finish some berkado earlier than

others, so those who have good relationship may barrow from others as a way of maintaining the close ties among relatives and hoping the same when they experience like such a situation.

The study findings also revealed that 4.9% of respondents were involving in animal fencing and animal remedy. Animal fencing has greatly contributed to the protection of the herds against attacks from predators such as hyena and lion during the night. Though it has not been common among the people of this village as it is with (Smith and Christiansen 1991), permanent predator proofing fencing is limited when livestock are kept in large enclosures, because such as fences are costly to build and maintain.Fences are made from the thorny branches of trees formed two large rings which is hard for predators to cross even if they manage to enter it is difficult for them to get out the fence.

Modern form of animal remedy is not common in this community, they have been curing animal disease with traditional methods which they have got from their ancestors, they kept for that long time until they have access to modern veterinary services which is not too much common among the pastoralist community, because it is expensive for pastoralists to buy, and the village is located in remote area which is not always available to the pastoralists. This study also agrees with (Hadrill, 1993), many Somali remedies for livestock ailments utilize locally available plants or other resources. Modern remedies are introduced and it is being taken but slowly to replace the traditional one which is not always easy with simple time to erode traditional customs and beliefs which have existed for generations.

This research also found out that hunting though practiced by other nomadic pastoralists of other regions for example among the Masai of Tanzania, Southern Somalia, the Turkana of Kenya, among others, during the study it did not fall into ears of respondents, it is just a minor activity especially during the dry season.

4.4 Effects of Nomadic activities on household welfare

The second objective of the study was the effects of nomadic activities on household welfare. The research findings discovered that the most effective parameters are income to the household, health for both human and herds and education level to the nomads. 95.6% of respondents agreed

that these activities generate income to household, while remaining 4.4% of respondents replied 'No'. The table 6 below shows how these different activities generate income to the nomads household.

Table 6: How nomadic activities generate income to pastoralists

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Milk production	28	62.2	63.6	63.6
	Meat production	7	15.6	15.9	79.5
	Construction of underground water	9	20.0	20.5	100.0
	Total	44	97.8	100.0	
Missing	System	1	2.2		
Total		45	100.0		

Source: Field Data

The research findings shown in table 6 above indicate that 63.6% of the community generates their income from milk production, while 20.5% of respondents get income from construction of underground water reservoir and 15.9% from meat production.

Most herders interviewed admitted that milk sales dominate as sources of income to nomads' households. It is clear that from the viewpoint of the pastoral commodity producer, the sale of milk would have its advantages, as it would allow the potentially fine-tuned sale of a replenish able commodity in a way that does not eat into the herd. Most elderly people said that people wanted to trade milk to buy sugar cloth, medicine and other things from the town, such as flashlights.

Interestingly, many talked about camel milk sales in terms of a tradeoff between the interests of people and camels. In the words of one elder: Selling milk is good for people, but it is bad for camels.Moreover, milk products tend to be in highest demand and to fetch the highest price in the dry season, when prices for livestock are low.

Although construction of underground water is practiced by few people (7.3% figure 1 above) in Afgooye, it was observed that 20.5% of respondents generate their income from selling berkado water. Investment in berkado is a lucrative commercial enterprise earning some families a significant income from the sale of surplus water to nomads especially during the dry seasons. The study found out that the capacity of berkado ranges from 800 to 1800 barrels which each barrel may cost in dry season about 25 Somali shillings (So.Sh.) depending on the circumstances. The average selling of berkado water is about 25 barrels per day making income per family around 20500 So. Sh. However not all sold water is paid by cash some is by exchange of herds such as goats and sheep.

According to data survey 15.6% of respondents generate their income by selling meat to the local market. Meat greatly contributes to household income in this community by selling meat to the local market and/or exchange with other commodities such clothes and foodstuffs for example wheat and sorghum.

Table 7: Effects of nomadic activities on household health

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	animal remedies	20	44.4	44.4	44.4
	milk production and consumption	3	6.7	6.7	51.1
	meat production and consumption	1	2.2	2.2	53.3
	Mobility	20	44.4	44.4	97.8
	Animal fencing	1	2.2	2.2	100.0
	Total	45	100.0	100.0	

Source: Field Data

In the response to the question whether nomadic activities impacts the health of pastoralists, 44.4% of respondents replied animal remedy while some percentage voted 44.4% for mobility as an adverse impact to household health. As table 8 shows that 2.2% and 2.2% of respondents

believed that meat production and animal fencing respectively and 6.7% milk production also have a considerable impact on household welfare.

In Afgooye district the study discovered that there are unique community animal remedies of treating animals, for example when the goats and sheep come to the drinking water point in the village they dig hole around two meters deep, half meter of width and one and half meter long, they mix the medicine with water up to half the hole, they start dipping the herds one by one until they finish, which they believe that all parasites on the herd are killed in this way.
But there are a number of problems associated with this practice, first the amount of medicine they pour into the hole may not be equal to the water they mixed, which causes death of animals as result of high dosage of medicine that would lead to reduction in the number of herds they have. The researcher also found out that these medicines can end up in the environment by infiltrating in to the soil, or can be washed away by runoff into water bodies especially in ponds located as near as 20 meters away from those holes, this can lead illness, hence catastrophic in to the surrounded community.

Another activity which affects the health of nomads is mobility. The study revealed that mobility jeopardizes treatment. It makes difficult for skilled health workers to delivery effective health services to vulnerable people such as women and children. Most pregnant women die due to complication. Mobility causes children miss immunization. Traditional medicine was often ineffective and serious illness always goes untreated. Some children may fall sick during the process of migration and things gets worse when they walk for long distances that deteriorate their health status.

As figure 1 shows that meat production and animal fencing are engaged in by a considerable number of people, their effect on nomads has not gone too far. From table 7 above, 2.2% of respondents agreed that meat production and animal fencing can have some sort of impact to nomads' health. The meat health related issues comes from the health status of the herds, the study discovered that when animals die of infectious diseases like anthrax, people eat the cercus increasing on their chances of getting the animal disease thus putting their health into danger , and the common diseases are burcella which is highly infective. Milk production has some sources of health impact like meat production that originate from herd sick. When animals are

under treatment it is recommended not to eat any product from them be it meat or milk, but surprisingly nomads do not accept to lose milk during the period of animal sickness. They drink milk with infections and medicine which can adversely affects their health.

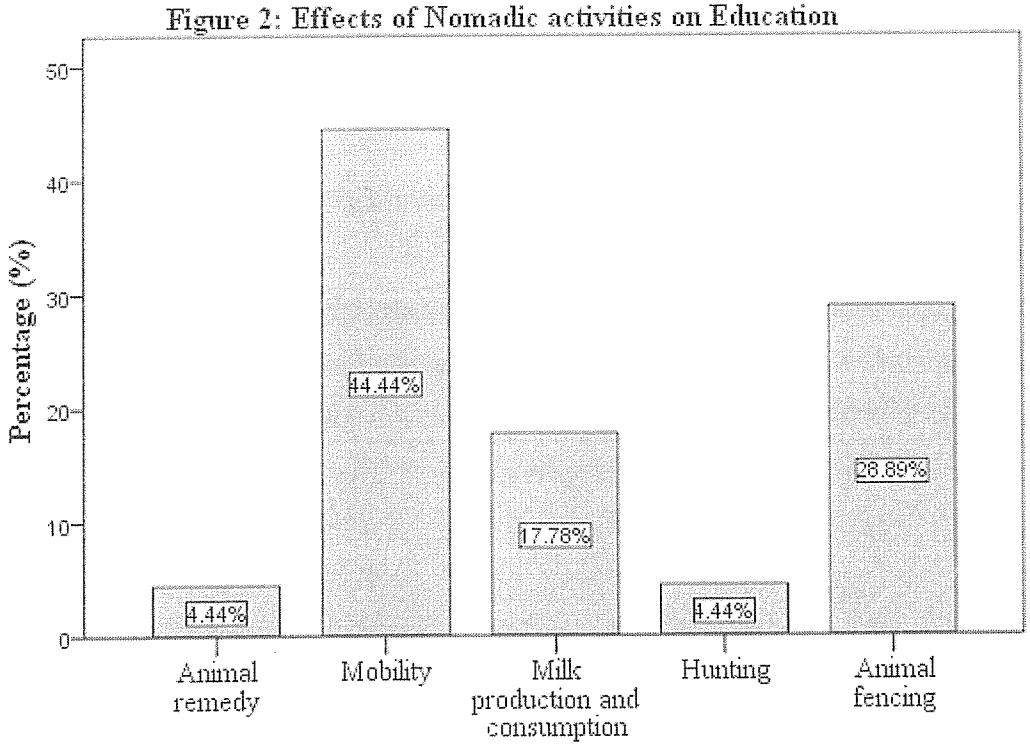
Table 8: Do nomadic activities affect access to education by children in Afgooye district

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	45	100.0	100.0	100.0

Source: Field Data

As shown from table 8, 100% of respondents replied 'yes' to the question whether nomadic activities influence the access to education for nomadic pastoral children. None of them said 'No'. This is an implication that nomads knows that this is affecting the education of their children and they are likely to respond in large numbers towards education programmes.

Figure 2: Effects of Nomadic activities on Education



Source: Field Data

From figure 3 above, mobility got the highest percentage of about 44.44% of respondents and they believe that movement from one place to another makes difficult for children to acquire even basic education unless introduction of mobile schools and this is in line with findings of (Chimah, 1990), which he revealed that constant migration and dispersion of nomads limits the acquisition of educational and other social facilities. The findings also discovered that girls and boys are not equal in education in terms of attendance because nomads believe that girls will marry their education will have less impact to the family, but boys may stay for long time for the family.

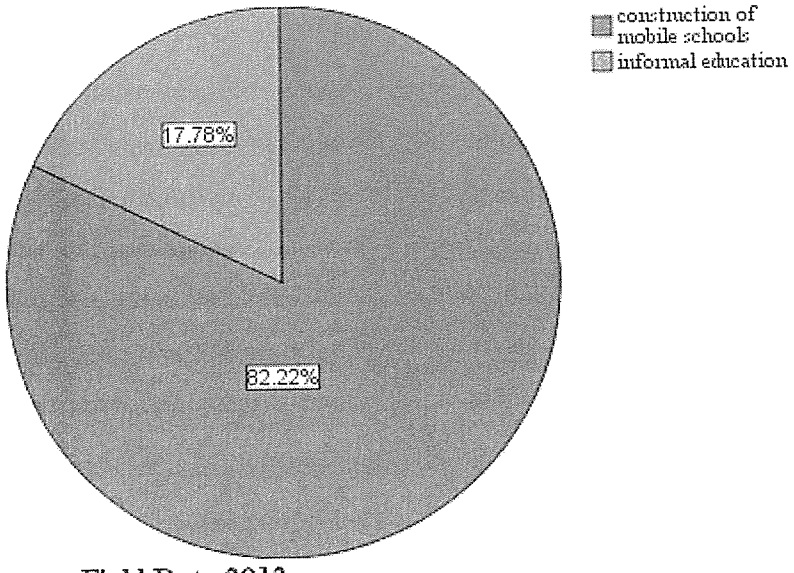
28.89% of respondents voted that animal fencing preventives children for accessing education. This activity demands a lot of work and time consuming, it is normally assigned to the boys since girls cannot do it. When nomads family settle in place boys have to construct of new fences before it reaches the nights when herds are at risk of predators.

From the viewpoint of the study, milk production limits access to education of nomadic children. They walk for long distances from village to village to sell milk. It is a daily activity that makes it hard for these children to get time for study. 17.78% of respondents answered 'yes' whether milk production can limit the chance for attending schools. Animals remedy and hunting have some source of effect for availability of education to the nomads children, around 4.44% of respondents admitted that these activities can be a challenge to provision of education among the nomads community.

4.5 How to improve the welfare of nomadic pastoralists in Afgooye district

The third objective of the study was how to improve the welfare of nomads people. The data collected revealed that 90% of the respondents responded 'yes' that welfare of this community can be improved. To improve the well-being of nomads the study found out that it must be based on provision of basic needs such as education, health, and water, as well as creating of sources of income by marketing the livestock products and permanent settlement which eases access to health and education facilities.

Figure 3: Improvement of Education to nomads community



Source: Field Data 2012

As shown from figure 4 above, 82.22% of respondents agreed that the construction of mobile schools is the best way to provide education to nomads in Afgooye district. While 17.78% said

informal education can also improve education. The study revealed that the reason why most people preferred the mobile schools is that mobile schools is appropriate to mobile life and offers ease to nomadic children because they can attend class whilst in close look at their grazing animals.

Formal education is not common among nomads, some people who attend schools are those from part-time pastoralists. They spend most of their time around village and may get chance to attend schools. The village has one school with four classrooms and one latrine; the researcher also found out that this school does not have all facilities such as tables, blackboard, and furniture. In addition, there are only two teachers in the village who do not receive their salary regularly because most salary comes from parents' income which largely depends and varies with livestock products.

Health services for Afgooye district

The study findings revealed that 82.2% of the people in the village do not have access to any form of health facilities. There is a medical center hospital (MCH), which was built by World Health Organization (WHO) but it doesn't have health workers and medicines. When the people fall sick they go to Afgooye district which is about 60 km from the village. The researcher asked the respondents the best way to improve the health status of the village. 57.5% of the respondents said that mobile health care can be the best to deliver health services to the nomads, while 42.5% responded that building health centers in rural areas can be bring about considerable improvement to health as shown in thetable below:

Table 9: The most applicable way nomadic health can be improved

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Building health centers in rural areas	17	37.8	42.5	42.5
	Mobile health care	23	51.1	57.5	100.0
	Total	40	88.9	100.0	
Missing	System	5	11.1		
Total		45	100.0		

Source: Field Data 2013

Mobile health care can be suitable where infrastructure and access to basic services are scarce. Mobile health teams can give hundreds of women and children access to basic health and nutrition services. The village is arid and drought-prone, this forces nomads to move from place to place in search for pasture and water for their animals, and because the community is mobile, unless you have mobile health strategies it is difficult to address their needs. "I can assure you that unless you bring us mobile health team here, we will not survive and the herds we have are going to finish". Said Ahmed Farah one of the respondents.

Building health centers in rural areas are intended to increase primary care services for Medical aid and Medical care patients in rural communities. But it requires team approach of physicians and midlevel practitioners such as nurse practitioners, physician assistants, and certified nurse midwives to provide services which too expensive in that area unless it receive external help from donors and government. Other problem from health centers is that it cannot move along with nomads as mobile health care do.

Management of drought problems in Afgooye district

From the study findings drought is the most pressing problem facing this community. Drought is responsible for the continuous movement of pastoralists to areas of high rainfall where there is vegetation and water for their animals. The village is characterized by low rainfall and

sometimes it takes one or two years in water shortage. During this time, the community faces chronic shortage of water and pasture. The study discovered that water scarcity has the highest complaint from the community when it is comes to the drought problem. In this community there is a variation in willingness and capacity to move in response to drought problem; those that shift rapidly before the long dry season begins are likely to conserve their herds. During this time pastoralists must sell their herds cheaply in order to buy water that they need urgently. The table below shows the different strategies of how drought problems can be minimize.

Table 10: Strategies to manage drought problems in Afgooye district

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Digging bore holes	19	42.2	42.2	42.2
	Construction of underground water	24	53.3	53.3	95.6
	Livestock banking	2	4.4	4.4	100.0
	Total	45	100.0	100.0	

Source: Field Data 2013

The study asked the respondents the best way how drought problems can be curtailed, 53.3% of the people said that construction of underground water reservoir (Berkado) is the best way to manage drought, while 42.2% agreed that digging bore holes can be a considerable strategy, and 4.4% of respondents voted for livestock banking.

Construction of underground water is the best applicable way to addresses water shortage in this community. A berkad is an artificial catchment that collects surface runoff that results from intense rainfall episodes. They are usually lined with masonry and/or concrete, and often include on one side a catch-pool that traps the coarse sediment (Plate 1.1 below). Berkads are generally constructed in gently sloping areas, where low barriers are sometimes present to direct runoff towards the catch-pool and then to the cistern. During the intense rainfall episodes, berkads may fill up within several hours and last for months throughout a dry period. They are the main water source for both the human and livestock water needs in this community. The study revealed that

one reason why most people construct berkado is their ability to hold water for long time during the dry season because it is built with cements and gravel which forms a barrier to water loss through ground infiltration. In addition Berkados are planted with vegetation surrounding the catchment to reduce on solar radiation which can reduce through evaporation.

Boreholes:
Boreholes are common water sources in the village. About 18 boreholes are currently operational in the whole village. It seems to be attractive option to the community because it can hold large quantity of water, without the need for a tedious bucket and rope water lifting system. By tapping into deep aquifer strata, this offers a greater degree of hygiene than dug wells and berkado.

Livestock Banking:

Livestock banking is not a common practice in this community, as it received only 4.4% of respondents;it is similar to the cereal banking where the producers assist the herders to cross the difficult season. The livestock banking requires feeding for herds, and it seems not feasible during hardest part of the year when the grains are too expensive.

Marketing livestock products

During data collection the study found out that marketing of livestock productsis very important to this community, since most of their livelihood completely depends on these products, such as milk, meat, hides, and skins. Although there is some sort of marketing system in the area, there are challenges for effective marketing system, such as appropriate pricing of the products, ignorance of the nomads especially during quantification of animal productsand\ or animals in relation to prevailing market prices, and bad health for herds. The table below shows different ways of marketing system in the village.

Table 11: Different ways to market the livestock products in the village

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Availability of good brokers	12	26.7	26.7	26.7
	Hawking to nearby trading centers	6	13.3	13.3	40.0

construction of common market centers	27	60.0	60.0	100.0
Total	45	100.0	100.0	

Source: Field Data 2013

In response to the question on best way of marketing livestock products, 60% of respondents revealed that construction of common market centers can be the best way suitable for this community. The study found out that common market center is best applicable in this area, since it prevents the exploitation from the individual person who can underprice their commodities, and they can get a different buyer who can offer a bargain chance.

About 26.7% of respondents suggested that availability of good brokers can significantly contribute marketingof livestock products. This is common in the village where brokers have special tents to meet seller and buyers to mediate them. Its traditional way and these people believe is the best way that their herds can have fair prices. The broker must be someone who has respective among community members in order to qualify as a good broker. Milk, hides and skins do not need brokers, while meat is common for broking in the village. Milk and hides involve small scales of market, and do not generate enough that can accommodate sellers, buyers, and broker while meat cost high price which broker can get some money.

Although hawking to nearby trading centers is widely common in the village, most respondents disliked it for reason being that it serves the interest of the buyers not for the nomads. Hawking traders is a marketing system common in remote areas, therefore it is easy for them to undermine and exploit these people by underpricing the value of their commodities.

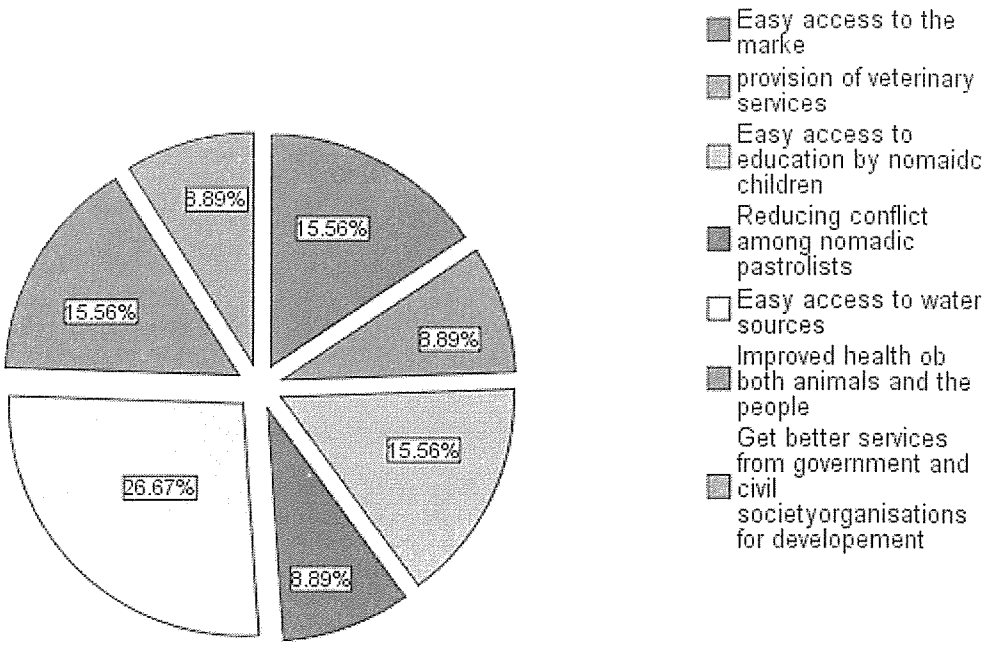
Introducing of Sedentarization system

The study findings discovered that across the study area pastoralists mobility is going down, more and more pastoralists live settlements in and around village are increasing. Herders move with the animals to seasonal grazing areas and women and children mostly stay behind has become common now days. In long dry season when most herds die due to lack of water and pasture, people shift to the village hoping they can get better life and they construct small tents

around the village. Many pastoralists have dropped out the pastoralists' life and have settled in towns, this often relates to drought induced and associated with much poorer and living standards and level of well-being in rural areas.

Another factor which is developing permanent settlement in the village is the lack of commoditization of livestock products which discourage many people to remain in pastoral life. Settlement in andnear town has increased access to health care, formal education, market for livestock products, and employment opportunities. The figure below shows how different ways of sedentarization can improve the welfare of pastoralists in Afgooye district. 91% of the respondents said that permanent settlement is the best way to improve on the well-being of this community.

Figure 4: Importance of Sedentarization to nomadic pastoralists



Source: Field Data 2012

From the study findings 26.7% of respondents preferred that sedentarization can increase the access to water sources by nomadic people. Pastoralists who usually settle in permanent areas are likely to have easy access to water than those who move from one place to other place normally from government donor agencies response. 15.7% of respondents believe that sedentarization has given a chance for nomadic community to improve the health of both human and their herds and same percentage also agreed that it makes it easy for accessing market and 15.6% believe that it can give easy access to education for nomadic children.

About 8.9% of respondents voted that sedentarization can increase the provision of veterinary services and possibilities of getting better services from government and civil society organization for development such as NGOs, while same percentage of the respondents revealed that it reduces the conflict among nomadic pastoralists community.

The study discovered that families who have shifted from nomadic life to permanent settlement have received better access to health care services especially vulnerable people such as women and children. They also can cure their herds by easy availability for veterinary medicine. Most children who their families joined the town life have get chance to attend the schools.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter summarizes the findings of this research; conclusion and appropriate recommendations were also made.

5.1 Conclusion

In the context of pastoralists livelihoods in Afgooye district, physical mobility relates principally to the freedom for people to move with their animals in search for grazing pastures, water and market for livestock products. A common failure of past rangeland development projects in Somalia was the focus on single issues and interventions in isolation, such as addressing animal health problems with veterinary services, or addressing the under-provision of education and health services with mobile schools and clinics. These measures are important, and both would contribute greatly to improving the well-being of people in the village, but they are not enough. There are political, institutional and social issues that also need to be addressed by the people of the village themselves.

Two interpretations can be drawn from the evidence presented in the findings. The first is that pastoralism in rural areas is becoming increasingly unviable, and that more interventions are therefore needed, to support (or control) pastoralists. These may include building abattoirs and requiring livestock export products to be processed according to international phyto-sanitary standards, or it might involve settling the pastoralists ("facilitating sedentarisation") to better provide services such as schools, clinics and water sources. This argument is reinforced by indicators suggesting that rural people have extremely poor outcome indicators (in terms of mortality, for instance), and that provision of basic public services (health and education) was seriously inadequate at the time of research in sedentary as well as mobile communities.

5.2 Recommendations

Drought risk management: pre-emptive measures (such as weather insurance) should be explored; as well as guidelines for "off the shelf" actions that can be initiated (such as de-stocking programmes) when early warning indicators suggest an imminent emergency.

Risks are an unavoidable part of pastoral life. The attitudes of pastoralists towards risk and their adaptation to it show that ways exist to cohabit with it. On the other hand, development planners and policymakers tend to put mechanisms in place to minimize or avoid risk, creating dangerous external pressures that distort pastoralist dynamics.In accordance to such a scenario policy makers should exhibit the utmost critic during policy formulation.

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APPENDICES

APPENDIX 1: RESEARCH QUESTIONNAIRE

RESEARCH TOPIC: IMPACT OF NOMADIC PASTORALISM ON HOUSEHOLD WELFARE: A CASE STUDY OF AFGOOYE DISTRICT, SOMALIA

Dear respondent, I am Abdifatah Mohamed Hassan a student of Kampala International University pursuing a Bachelor of Science in Environmental Management, carrying out a research on the impact of Nomadic pastoralism on household welfare. Any information given shall be treated with high degree of confidentiality. Please answer the following Questions.

1. Gender: ( ) Male

( ) Female

2. Age: ( ) 18 – 28

( ) 29 – 38

( ) 39 – 48

( ) 49 and above

3. Education level: ( ) Primary level

( ) Secondary Level

( ) Tertiary level

( ) None

4. Marital status :( ) Married

( ) Single

( ) Separated

( ) Widow

Any other (specify) _____

5. What position do you hold in this community?

( ) Business person

( ) Religious leader

( ) Community leader

( ) House wife

( ) Herder

Others (elaborate)_____

Section B: Nomadic activities in Afgooye district

6) Do you practice any Nomadic activities?

a) Yes ☐

b) No ☐

7) If yes which ones in particular do you involve in? Tick appropriately.

a) Animal remedy ☐

b) Milk production or consumption ☐

c) Meat production or consumption ☐

d) Mobility ☐

e) Construction of underground water (Berkado) ☐

f) Hunting ☐

g) Animal fencing ☐

h)

Section C: Effects of Nomadic activities on household welfare

8) Do the activities you engage in generate income to you?

a) Yes ☐

b) No ☐

9) If yes, which activities in particular generate income to your household?

a) Milk production ☐

b) Meat production ☐

c) Construction of underground water ☐

d) Hunting ☐

10) Which activity mostly affects the health of Nomads household?

a) Animal remedies ☐

b) Milk production and consumption ☐

c) Meat production and consumption ☐

d) Mobility ☐

e) Hunting ☐

f) Construction of underground water (Berakdo) ☐

g) Animal fencing ☐

☐

11) Do these activities affect access to education by children in your community?

a) Yes

b) No ☐

12) Which activities affect the access to education by children in your community?

c) Animal remedy ☐

d) Mobility ☐

e) Milk production and consumption ☐

f) Meat production and consumption ☐

g) Hunting ☐

h) Animal fencing ☐

SECTION D: How to improve the welfare of Nomadic pastoralist

13) Do you think that the level of education in this community can be improved?

a) Yes ☐

b) No ☐

14) If yes how do you think can be improved?

a) Construction of mobile schools ☐

b) Informal education ☐

d) Others specify.....

15) Do you have access to health services both for animal and human in this community?

a) Yes ☐

b) No ☐

16) If no, which most applicable way do you think health can be improved in this community?

a) Building health centers in rural areas ☐

b) Mobile health care (Community Animal Health Worker, (CAHW) ☐

c) Others specify.....

17) What best ways do you think drought problems can be managed in this community?

a) Digging Bore holes ☐

b) Construction of underground water (Berkado) ☐

c) Provision of food aid ☐

d) Restocking ☐

e) Others elaborate.....

18) Which best ways do you think livestock products can be marketed?

a)Availability of good brokers ☐

b) Hawking to nearby trading centers ☐

c) Construction of common market centre ☐

d) Others specify.....

19) Do you believe that Sedentarisation is one of the ways that can improve the welfare of this community?

a) Yes ☐

b) No ☐

20) If yes, why do you prefer Sedentarisation?

a) Easy access to the market ☐

b) Provision of Veterinary services ☐

c) Easy access to education by Nomadic children ☐

e) Reducing conflict among Nomadic pastoralists ☐

f) Easy access to water sources ☐

g) Improved health of both animals and the people ☐

h) Get better services from government and civil society organizations for development ☐