# STUDY ON OPTIONS FOR PASTORALISTS TO SECURE THEIR LIVELIHOODS

## ASSESSING THE TOTAL ECONOMIC VALUE OF PASTORALISM IN TANZANIA

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# PREFACE

## Tanzania Natural Resources Forum

Tanzania Natural Resource Forum (TNRF) is a collective civil society-based initiative to improve natural resource management in Tanzania by addressing fundamental issues of governance. They view the quality and equity of governance as fundamentally determining how natural resources are managed and how they support the livelihoods of Tanzanians and the sustainable economic development of the country; and work to improve accountability, transparency and local empowerment in natural resource management. They bring together a diverse range of stakeholders and interests to share information, build collaboration and pool resources towards a common aim of better and devolved natural resource management. TNRF is a long term, innovative and adaptive process of advocacy and capacity building, based on collaboration and collective interests.

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## DISCLAIMER

The views expressed in this report are strictly those of the author and do not necessarily reflect those of the TNRF.

## LIST OF ABBREVIATIONS

| | |
|---|---|
| AIDS | Artificial Immuno Deficiency Syndrome |
| AWF | African Wildlife Fund |
| CORDS | Community Research and Development Services |
| DALDO | District Agricultural and Livestock Development Office |
| DIIS | Danish Institute of International Studies |
| EC | European Community |
| FAO | Food and Agriculture Organisation of the United Nations |
| GDP | Gross Domestic Product |
| HIV | Human Immuno Virus |
| IIED | International Institute fro Environment and Development |
| ILCA | International Livestock Centre for Africa |
| ILRI | International Livestock Research Institute |
| MNRT | Ministry of Natural Resources and Tourism |
| MOA | Ministry of Agriculture |
| NBS | National Bureau of Statistics |
| NDV | National Development Vision |
| NGO | Non Governmental Organisation |
| NNP | Net national product |
| NSGRP | National Strategy for Growth and Reduction of Poverty |
| PRSP | Poverty Reduction Strategy Paper |
| PWC | Pastoralist Women Council |
| RDS | Rural Development Strategy |
| SUA | Sokoine University of Agriculture |
| TBS | Tanzania Bureau of Standards |
| TEV | Total Economic Value |
| TNRF | Tanzania Natural Resource Forum |
| TzPPA | Tanzania Participatory Poverty Assessment |
| UK | United Kingdom |
| URT | United Republic of Tanzania |
| USD | United States Dollar |
| WCED | World Commission on Environment and Development |
| WISP | World Initiative on Sustainable Pastoralism |
| WTO | World Trade Organisation |

Table of contents

# 1 INTRODUCTION

## 1.1 BACKGROUND

This report contains the findings of an assessment of the Total Economic Value of pastoralism in Tanzania which was carried out as part of a collaborative study on Options for Pastoralists to Secure their Livelihoods in Tanzania, initiated in the early 2007 by the Pastoralist Women Council (PWC), the Tanzania Natural Resource Forum (TNRF), the Community Research and Development Services (CORDS) and the International Institute for Environment and Development (IIED) East African Programme. The study was a response to the continued lack of understanding and the consequent marginalization of the pastoral communities in many parts of Tanzania. There is a long track record of inadequate understanding and support for rangeland people and their mobile customary range management and livelihood systems (TNRF, 2007). Despite the fact that customary range management forms the basis of a potentially efficient and ecologically sustainable production and livelihood system, they are under threat and are failing to adapt to the challenges it faces.

It is believed that the decline in rangeland systems is compounded by a lack of government support for improving rangeland livelihoods based on adaptive customary management systems. The government has been evolving policies and practices many of which are in conflict with the needs and interests of pastoral communities because they are not based on their socio-economic realities: a long established and cherished cultural heritage, livestock production as a principal means of livelihood, high mobility through constant migration, and the harsh environment characterized by drought, animal rustling, disease, and poor means of communication (Mlekwa, 1996). It is commonly perceived that pastoralism poorly contributes to the national economy in terms of livestock exports, that pastoralism is heavily limited by disease management deficiencies and that pastoralist range management is obsolete, unproductive and environmentally degrading. Thus the government decisions and actions are usually in favor of sedentary commercial livestock production models such as ranching and would like to abandon customary mobile range management systems. The government seems to neglect the negative consequences of these actions. Together with the growth of commercial agriculture, this policy approach is not pro-poor and is more likely to bring about poorer livelihoods, inequitable access to range resources, and increased environmental degradation, most notably in semi-arid regions of the country where pastoralism is most prevalent (TNRF, 2007). Rising productivity within labor-intensive small farms in which a majority of people is involved can be expected to have a broader effect on poverty reduction than equivalent productivity increases on large,

mechanized holdings, which typically generate less additional demand for local goods and services. The sedentary commercial livestock production will also affect migratory wildlife adversely and the potential for developing a diversified rural economy that benefits from tourism (TNRF, 2007).

Since late 1990s, Tanzania has experienced a sustained average economic growth of 5%. However, this is not reflected in substantial poverty reduction as indicated in the latest 2000/2001 Budget Surveys (HBS), raising some concerns over the role of economic growth in poverty reduction and consequently leading to skeptical views that economic growth might not be a sufficient factor for poverty reduction. Bourguignon (2004) tells us that "the rapid elimination of absolute poverty, under all forms, is a meaningful goal for development" and to achieve this goal it is needed a "strong, country specific combinations of growth and distribution policies". The lack of support to sectors in which majority of the poor are working such as pastoralism is largely responsible for the income inequalities and the consequent dismal poverty reduction albeit the impressive economic growth.

Insufficient understanding about the ecology of adaptive range management based on customary systems and a lack of understanding about their TEV, seems to be one of the important factors for the lack of government support for the systems. The economic value of pastoralist production remains poorly captured by formal statistics – as much of the pastoralist economy remains in-formal and thus the Total Economic Value (TEV) of pastoralism to the national economy remains understated, and this constitutes a significant data gap, which needs to be filled to develop more effective policy advocacy. The available information shows that pastoralism is not reflected in the government policies as a productive and sustainable production system upon which a vibrant national livestock industry could be based. The government policies also seem to underplay the significance of pastoralism as a socio-economic and cultural system for millions of people and more importantly, the conservation significance of pastoralist range management systems for the viability of wildlife and wildlife-based tourism outside key protected areas is little recognized (TNRF, 2007). This study was, therefore, intended to critically analyze the TEV of pastoralism so as to develop an economic argument for pastoralism that will help in advocacy for pastoral range management systems and improvement of livelihoods in the pastoral communities.

## 1.2 THE STUDY OBJECTIVES

As indicated in the background, lack of information on the economic value of the pastoral systems is responsible for the inadequate policy and institutional support for the systems. The lack of recognition of pastoralism as an important partner in economic development, has led to marginalization of the pastoral communities thereby deepening the severity of poverty in the rural areas. A world wide debate is called upon to deepen the understanding of the valuable role of pastoralism not only on the local economies, but also on the regional and global economies, and advocate for policy and institutions to support the production system. However, this debate would be successful if adequate information was available on pastoralism and its role in economic growth, a problem which this study seeks to contribute to its solution.

The main objective of this study is therefore to fill information gaps regarding the significance of pastoralism by providing an initial assessment of the Total Economic Value of pastoralism in Tanzania in terms of methodological review; literature review for previous studies relevant to TEV; and overview of the TEV of pastoralism in Tanzania. The detailed Terms of Reference for the study are presented as Appendix 1.

## 1.3 RESEARCH METHODS AND APPROACH

### 1.3.1 Approach

The study adopted the Total Economic Value (TEV) Analysis as its overall approach for data collection and analysis. The TEV concept is now a well-established and useful framework for identifying the various values associated with such production systems as pastoralism. The total economic value of a pastoral system consists of its use values and non-use values. While use values are made up of direct use values[1], indirect use values[2], and option values[3], non-use

1 The direct use values of a pastoral area are values derived from the direct use of the pastoral area for activities such as recreation, tourism, natural resource harvesting, hunting, gene pool services, education and research. These activities can be commercial, meaning they are traded on a market (resource harvesting, tourism and research), or non-commercial, meaning there is no formal or regular market on which they are traded (fuel wood collection and informal grazing).

2 The indirect use values of a pastoral area are values derived from the indirect uses of the area. Indirect uses are largely comprised of the ecological functions such as watershed protection, breeding habitat for migratory species, climatic stabilisation and carbon sequestration. Pastoral areas also provide natural services, such as habitat for insects which pollinate local crops or for raptors which control rodent populations. Indirect use values are often widely dispersed and thus go unmeasured by markets. Alternative valuation techniques discussed later are necessary for measuring them.

values are values (i.e. bequest values and existence values), which humans hold for a pastoral area which are in no way linked to the use of the area.

According to Hatfield et al. (2006), undertaking a full TEV study is usually unnecessary; as such an extensive exercise would be very costly, time-consuming and difficult. It is important, however, to be sure to have measured the values which are most important for the study. In view of this, Hatfield et al. (2006) proposes a simplified methodology, and this study bases its data collection and analysis on this methodology as summarized in Table 1.

*Table 1: Framework for TEV data collection and analysis*

| **Value** | **Type of data** |
|---|---|
| Sales | household level data on sales<br>in-country market data<br>national statistics for GDP and foreign exchange earnings |
| Subsistence | household level data<br>estimates from neighbouring regions or countries |
| Complementary products | household and/or market data on extent and magnitude of associated<br>dryland products such as medicinal plants, gum Arabic |
| Tourism | percentage of tourism sector supported by pastoral landscapes<br>value of tourism to GDP and foreign exchange earnings<br>employment |
| Market chain linkages | review of pastoralist-related 'value-added' market chains and multiplier |

3 The option values of a pastoral area are values derived from the option of using the area sometime in the future. These future uses may be either direct or indirect and may include the future value of information derived from the area. Future information is often cited as particularly important for biodiversity as untested genes may provide future inputs into agricultural, pharmaceutical or cosmetic products.

| | |
|---|---|
| | effects within national economies<br>global added value for medicinal plants (e.g. gum Arabic) |
| Return-on investment | review of national expenditures into support for pastoralist systems |

Source: Hatfield et al. (2006)

### 1.3.2 Methodology

#### i. Desk study

The desk study was essentially a review of existing documentation of the following:

- Appropriate methodological approaches for assessing and carrying out an economic analysis. The review covered earlier methodologies, concept of sustainability and capital theory; measuring economic values of a pastoral system and the emergence of the total economic valuation; and the application of the total economic value approach.
- A review of previous studies on pastoralism undertaken in Usangu basin and elsewhere in Tanzania and other African countries.

#### ii. Secondary Data Collection

These were collected at two levels: national level and district level. National level livestock statistics, agricultural census data, trade and export of live animals and livestock products were collected from the Ministry of Livestock Development, Ministry of Agriculture, Food Security and Cooperatives and National Bureau of Statistics.

District level data on livestock statistics and livestock trade were collected from files obtained from Mbarali District Agricultural and Livestock development office during the field visit in December 2007.

#### iii. Field survey

The field survey was conducted in the Usangu Basin as a case example of pastoralist system to provide evidence of TEV of pastoralism in Tanzania.

#### (i) The Usangu plain

The Usangu Basin in south-west Tanzania forms an important part of the upper catchment of the River Rufiji, Tanzania's largest river. Usangu basin covers an area of some 20,800 $km^2$ and is home to over 200,000 people, most of whom depend for their livelihoods on the natural resources of the basin.

The Usangu plain is located in Mbarali district in Mbeya region and covers approximately half of the district. The Usangu plains consists of large areas of alluvial fans, which support the majority of the people who live in the catchment. The plain also encompasses an extensive wetland, comprising seasonally flooded grassland and a much smaller area of a permanent swamp commonly known as Ihefu which collects water from all the rivers in the mountainous catchment. The swamp has an outflow controlled through a natural rock outcrop, which channels all the downstream flows from Usangu through the Great Ruaha River. The Great Ruaha river flows first through the Ruaha National Park, and then to the linked Mtera/Kidatu hydropower reservoirs on the main Rufiji River.

Three farming systems can be identified in Usangu plain: maize-mixed farming system in the Upper Usangu; paddy farming system in Middle Usangu; and an agro-pastoralist farming system in the Lower Usangu. Villages in the Lower Usangu (e.g. Ukwaheri and Upagama) used to be scarcely populated and the area had the largest number of livestock in the plain, owned mostly by immigrant pastoralists, the Sukuma people from Shinyanga.

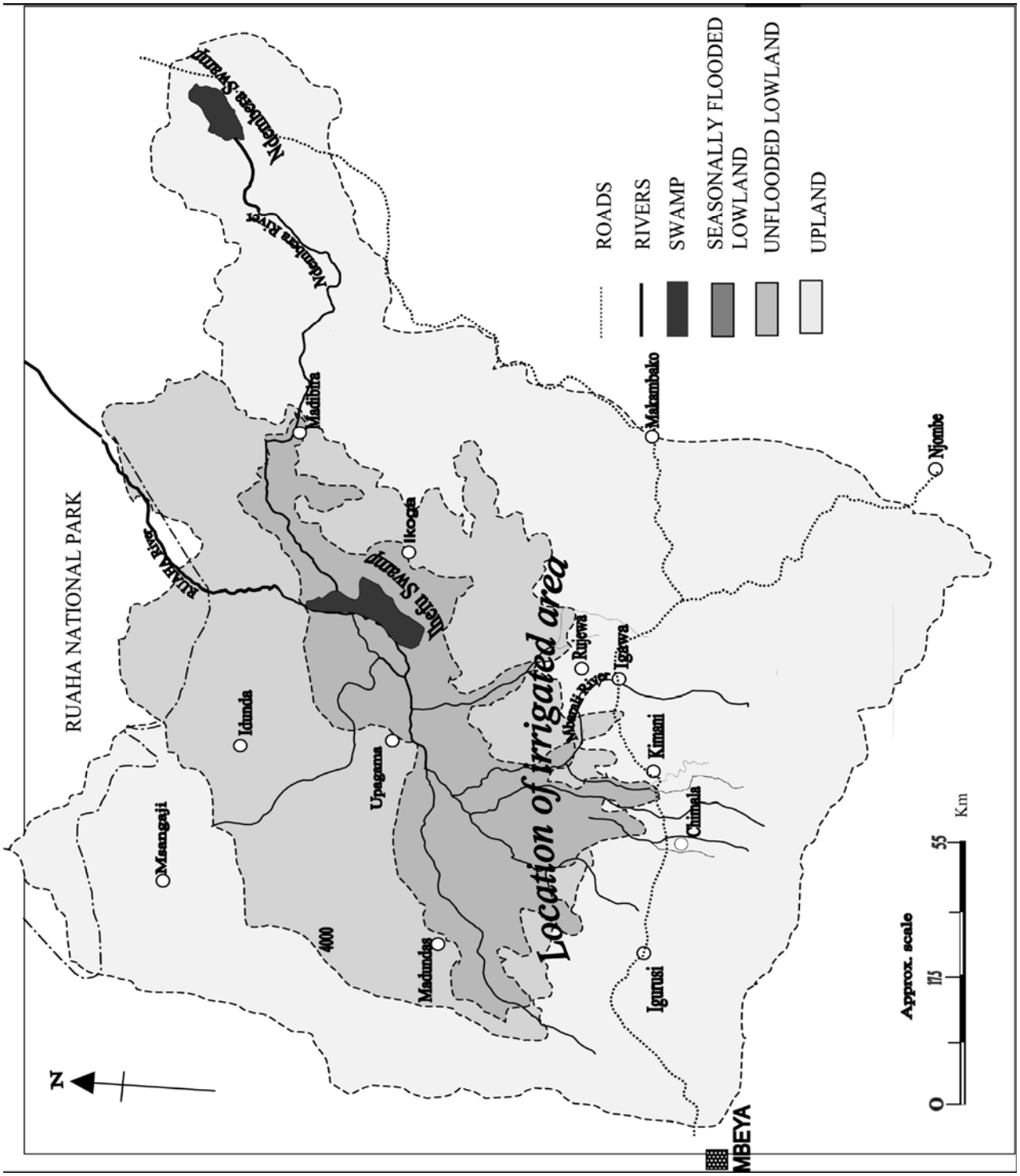



*Figure 1: Map of the Usangu plains.*

Source: Franks Tom, Bruce Lankford and Makarius Mdemu (2004).

Until recently the livestock keepers have grazed their livestock around *Ihefu* swamp. In 1998 the area was gazetted as a game reserve, though this decision was not enforced. Following the long

spell drought in 2005, the pastoralists were scapegoatly blamed for overgrazing the area, leading to their eviction from the area.

**(ii) Data collection and analysis**

The survey was undertaken in December 2007. The survey employed a combination of data collection methods namely focus group discussions, key informant interview and interviews with heads of pastoral households. The data from heads of pastoral households were collected using interview guides. The interview guides were designed specifically to gather quantitative information about various pastoralist values. The data were then analysed using both quantitative (descriptive statistics) and qualitative (frequencies and percentages) methods.

## 1.4 1.4 STRUCTURE OF THE REPORT

The report is structured as follows. The next section sets out to review literature on approaches and methodologies for assessing and measuring economic values as well literature on pastoralism in Tanzania and elsewhere in the World. This is followed by section 3 which provides an overview of total economic value of pastoralism in Tanzania based on available literature abd secondary data and description of the value of pastoralism in the Usangu Basin based on the field survey data. Finally, section 4 provides a synthesis of the literature review and the field survey findings and draws conclusions and recommendations.

# 2 2.0 LITERATURE REVIEW

## 2.1 2.1 AN OVERVIEW OF APROACHES AND METHODOLOGIES

In this section we present a review of the literature on methodological approaches for assessing and measuring economic values of various economic activities. The objective of this review is to show the theoretical and methodological explanation of the misconception of pastoralism. We argue that the inadequate support to pastoralism has its roots in the economic theory and the methodologies used in measuring economic values of various economic activities associated with pastoralism. A review of the theoretical background of economic valuation is therefore important prior to dwelling into the subject matter i.e. pastoral goods and services valuation. In this review, we cover the economic valuation concepts; methodologies for measuring economic valuation; the emergence of the TEV approach; and the application of the approach.

### 2.1.1 2.1.1 The economic valuation concepts

The methodologies used to determine the economic value of natural resources, biodiversity and ecosystems have been revolving around the concepts of sustainability and capital theory[4]. A critical review of literature on sustainability and capital theory concepts was extensively undertaken by (Pezzey *et al*., 2002)[5]. The literature distinguishes two schools of thought regarding sustainability and capital theory: (1) weak sustainability (Dasgupta and Heal, 1974; Stiglitz, 1974; Solow, 1974; Withagen, 1998); and (2) strong sustainability (De Groot *et al*., 2003; Chiesura and De Groot, 2003; and Prugh *et al*., 1995).

According to WCED (1987), sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs. Accordingly, the main stream neoclassical school on capital asserts that the aggregate stock of capital assets should remain constant over time to ensure that there is no decline in per capita well-being over that time horizon (Pearce and Atkinson, 1998; and Cairns, 2000). In view of this, the weak sustainability concept assumes complete elasticity of substitution between natural and man made capital such that if any of the total assets is reduced, its reduction will be offset or compensated by an increase in the value of other assets in order that the unit's income may be sustained (Stern, 1995; El Serafy, 1997; Turner, 1992). This, commonly known as, compensation or intergenerational equity, could be achieved by investing rents from depleted capital into other forms of capital assuming that there could be positive technological and population changes that could lead to increased output and consumption (Lange and Wright, 2004; Collados and Duane, 1999). By emphasizing on aggregate capital stock the weak sustainability view ignores the necessary requirement to calculate separately the components of total economic value in determining sustainability, leaving a room for the possibility to overlook the concerns over the degradation of certain types of capital such as natural capital. This view has, therefore, broadly received criticism because of the (i) limits to technological changes as is not something automatic; (ii) limits to substitution between natural and manmade capital stocks;

4 Sustainability is achieved if the welfare of the society in question, measured in terms of consumption and utility, is constantly maintained overtime (Dasgupta and Heal, 1974; Stiglitz, 1974; Solow, 1974; Withagen, 1998).

5 In the review Pezzey et al. (2002) point out that economists started taking sustainability seriously after Meadows et al. (1987) who pondered the sustainability of the whole of industrial civilization, given the ultimate finiteness of the planet's capacities to provide material inputs to modern economies (and to assimilate their waste outputs) in The "Limits to Growth".

(iii) counterproductive effects of population growth as population growth is also likely to deplete natural resources.

Strong sustainability view, on the other hand, builds on the weak sustainability view criticism; and the contributions from Norton (1982), Page (1983), and Parfit (1983). The strong sustainability view disputes the substitutability of capital as being sufficient to protect the overall level of capital because for sure some capital is not substitutable (Turner, 1992; Victor, 1991). In contrast, minimum amounts of different forms of capital should be maintained independently or separately which therefore assumes that reproducible capital and natural capital are complements rather than substitutes (Prato, 1998; El Serafy, 1997; Serageldin, 1996; van Kooten and Bulte, 2000). The view acknowledges the difficulty in capital substitution emanating from the environmental characteristics limits such as irreversibility in the context of environmental degradation or loss of biodiversity; scientific uncertainty and the existence of critical components[6] of natural capital (Pearce and Turner, 1990; Ekins et al., 2003; Perman *et al*., 2003).

Pezzey *et al*. (2002) reports that several other important theoretical contributions addressing growth, resource use, and intergenerational equity were made by Riley (1980), Becker (1982), and Dasgupta (1983) and Krautkraemer (1985). Pezzey *et al*. (2002) also identifies Norton (1982), Page (1983), and Parfit (1983) as important contributors to the developments in the philosophy of intergenerational equity. Such contributions paved the way for future debates about sustainability by drawing attention to moral criteria (such as concepts of environmental justice and stewardship) that are important for intergenerational resource allocation.

Advocates of the use of strong sustainability criteria, most notably Pearce and his co-workers, have argued that the view that capital stocks be constant, should be applied to stocks of environmental capital on an individual basis, rather than to the aggregate of natural and man-made capital (Pezzey *et al*., 2002) as the rate of depletion of resources differ significantly.

### 2.1.2 2.1.2 Measuring economic values

[6] Resources for which substitution is not possible between natural and man made capital (e.g. some natural capital provides some life support functions). For instance, climatic change can not be compensated for by manufactured capital even in the presence of high level of human knowledge or technology (Ekins et al., 2003). Capital can also become critical if it is vulnerable (De Groot et al., 2003).

Literature indicates a split in the measures used to determine values of economic activities between those who base their arguments on weak sustainability concept and those who base on strong sustainability view. While there are other indicators of weak sustainability such as genuine savings[7] and welfare per capita[8]; the use of net national product (NNP), the difference between the gross national product (GDP) and depreciation of produced capital, seems to be the most widely used measure of sustainability by weak sustainability supporters. NNP however does not include natural resource depletion and environmental degradation in the national accounts (Asheim, 2003). The fact that NNP leaves out environmental considerations in the national accounts, the measure loses its credibility in measuring sustainability, and it turns out to be a misleading indicator.

Though governments and other development agencies have usually been using the conventional measures of national income such as Gross Domestic Production (GDP), Gross National Product (GNP) and Net National Product (NNP) in their decision making and development planning, these were designed principally to monitor temporal changes in aggregate economic activities (Prato, 1998; Peskin, 1991). The measures were never intended to be measures of wealth and societal welfare because they do not account for the value of natural resources and changes in environmental and resource conditions upon which all production ultimately depends (Hassan *et al.*, 1998; Peskin, 1991; Turner and Tschrhart, 1999). While for instance the conventional national accounts measures treat gradual wear of physical capital (machines and equipment) as depletion rather than income, they respond poorly to depletion of natural resources (El Serafy, 1989). The main argument regarding natural resource accounting is not to prevent societies from using natural resources; rather to have proper measurement of values to guide how much to spend on consumption and investment in order to maintain a constant or increasing level of income (Santos and Zaratan, 1997).

Particularly important for pastoral systems, the national income accounts neglect subsistence activities because they focus on production of market goods and services (Hassan *et al.*, 1998

[7] Genuine savings is a measure of the true rate of savings in an economy after accounting for depreciation and depletion of capital assets (World Bank, 1997). Hamiliton *et al.*, (1997) defined genuine savings as the sum of net investment in produced assets and human capital and the changes in various stocks of natural resources and pollutants (valued at shadow prices), and thus genuine savings is a measure of net increase or decrease in the nation's wealth.

[8] Change in welfare per capita is a modification of genuine savings to take into account the effects population growth on the total well-being.

Peskin, 1989). As a result the benefits derived from the use of tangible and intangible non-market goods and services are missing. These benefits include the value of firewood collected directly by many households, the carbon sink function of standing forests and watershed protection and other services offered by various eco-systems (Hassan *et al.*, 1998). Peskin (1989) cautions that it should be clear that if non-market activity is widespread in an economy, and if such activity is ignored in the national data system, then these systems will not be able to support accurate analysis of economic behavior. Lack of data on non-market activities, especially those that lead to negative externalities such as pollution, may produce a distorted view of the likely benefits of actual and proposed development projects (Peskin, 1989). Such a view is likely to result in sub-optimal allocation and unsustainable extraction and use of natural resources (Hassan *et al.*, 1998; Winter-Nelson, 1995; El Serafy, 1997).

**In view of the weaknesses inherent in the conventional measures of economic values, alternative concepts are being sought to account also for natural resources and indirect use values. Literature on strong sustainability school of thought emphasize on the maintenance of different forms of capital. This means that (1) the physical quantity of natural resources must not change; (2) the unit value of the natural capital must not change; and (3) the value of the resource flows from natural capital must not change (Pearce and Turner, 1990). Perman *et al.*, 2003 Turner, 1992) argue that strong sustainability cannot, therefore, be analyzed solely in terms of economic tools since ecological sustainability is a prerequisite for strong sustainability, and physical indicators for sustainability, such as change in the level of species to measure resilience of an ecosystem, are better measures of sustainability because they indicate threshold levels of critical capital.**

The total economic value (TEV) concept is a product of the efforts to capture all the economic values for not only man made capital assets but also the natural resources. The approach also attempts to include non-marketed goods and services in economic analysis. The concept of total economic value (TEV) is now a well-established and useful framework for identifying the various values associated with eco-systems. The total economic value of an ecosystem consists of its use values and non-use values. The use of TEV approach, surely enables a holistic assessment of all the critical values of eco-systems and could be an important tool for generating information for policy makers and overall framework for decision-making and pro-pastoralist policy dialogue.

### 2.1.3 2.1.3 Total economic value of pastoralism

The persistent under-valuation of pastoralist goods and services is associated with the use of conventional concepts of economic value that have usually been based on weak sustainability view, which naturally leads to a very narrow definition of benefits. Economists view the value of natural eco-systems such as pastoralism only in terms of the raw materials and physical products that they generate for human production and consumption, especially focusing on commercial activities and profits. However, these direct uses represent only a small proportion of the total value of pastoraslsm, as it generates economic benefits far in excess of just physical or marketed products. Hatfield et al. (2006) note that the value of pastoralism should not be confined to that which can be captured in the marketplace as pastoralism has a wide array of values that are entirely overlooked by market oriented surveys. When practiced effectively, pastoralism creates and maintains ecosystem health and stability, and as such it is responsible for a range of environmental goods and services, which are enjoyed far beyond the boundaries of the pastoral system itself (Hatfield *et al*., 2006).

The concept of total economic value has now become one of the most widely used framework for identifying and categorising pastoral benefits (Barbier *et al*., 1997). In addition to direct commercial values, it also encompasses the subsistence and non market values, ecological functions and non-use benefits associated with pastoralism. It clearly demonstrates the high and wide range of economic benefits associated with pastoralism, which extend beyond the direct use values. Hesse and MacGregor, (2006) in their IIED's paper "Pastoralism: drylands' invisible asset?" they identify a broad framework for assessing the benefits of pastoralism, looking beyond the immediate benefits of livestock and livestock products. This framework is further reinforced by Hatfield *et al*. (2006) emphasizing that it could provide a strong tool for understanding the true contribution that pastoralists make to their domestic economies. Hatfield *et al*. (2006) highlights a range of different values that should be attached to pastoralism. Looking at the total economic value of a pastoralism essentially involves considering its full range of characteristics as an integrated system (i) its resource stocks or assets; (ii) flows of environmental services; and (iii) the attributes of the ecosystem as a whole (Barbier 1994). These include direct measurable values (live animals, milk, hides and other derivatives); direct unmeasured values (employment, production and environmental management skills); indirect measurable values (subsistence, inputs to tourism, inputs to agriculture, market linkages, taxes); and indirect unmeasured values (Ecological and rangeland services, agricultural services, socio-cultural values, option and existence values).

Some work has already been done in some countries using the TEV framework. In Tanzania, Letara *et al*. (2006) estimated the economic significance of pastoralism in Tanzania focusing on *nyama choma* sector; and were able to establish the true contribution of *nyama choma* businesses to the economy of Arusha municipality, and linked their findings on the sector and its supply chains back to pastoral systems that provide the raw material (meat); thereby allowing them to demonstrate the broader contribution of pastoralism to the local and regional economies that are often not captured in official statistics.

In four countries of Kenya, Tanzania, Uganda and Sudan, collation and documentation of information on economic valuations of pastoralism was carried out by Odhiambo (2006). He confirms the paucity of data about the value of the contribution of pastoralism to national economies, not because that contribution is lacking, but mainly because the analytical framework of these economies does not permit its full appreciation. He further reports that, even where efforts have been made to collect data, this has been limited to data on livestock and livestock products such as milk, hides and skins sold at national markets, as neither of the non-monetised contributions such as manure, draught power, control of bush and weeds, recycling of household waste, nor is the contribution that pastoralism makes to the conservation and wildlife-based tourism1are captured or acknowledged.

## 2.2 2.2 PAST STUDIES ON PASTORALISM IN TANZANIA AND ELSEWHERE IN AFRICA

The pastoralists have been the object of study for quite some time now. In this section we present a review of previous studies on pastoralism that were carried out in Tanzania and elsewhere in Africa. Odhiombo (2006) and Gehnke *et al*. (2006) provide literature review on the contribution of pastoralism. The two review studies were commissioned by the World Initiative on Sustainable Pastoralism (WISP) within the framework of its Economics of Pastoralism consultancy. While Odhiombo was focusing on East afirican countries, Gehnke focused on Horn of Africa and South Africa. Odhiombo (2006) provides a summary of studies that were conducted in various places. These include Toulmin Camilla (1983) who examines how pastoral production is affected by the wider economy and how the changes in terms of trade between the pastoral products and other goods are seen to affect patterns of specialization; Lane (1998) who attempts to explain the importance of pastoralism in the countries in which it is practiced addressing its sustainability and how pastoralism is the only production system appropriate to the drylands of East and West Africa and their sustainability; and Barret *et al*. (2004) who casts doubt on the prevailing wisdom about what limits offtake rates among pastoralists in the arid and semi-arid

areas of East Africa. The authors find little empirical support for many of the claims commonly made and which inform the measures often proposed for stimulating livestock marketing offtake among pastoralists in the region. They conclude that the best strategy is to support viable pastoralism. Other studies that are cited by Odhiombo (2006) include Hugo (1992) who attempts to understand and value the interaction between pastoral people and their environment, and to model the economic behavior of a specific pastoral group. The paper submits that subsistence economies can serve as examples for Western people and their economies in exploring how to respect nature and use it sustainably. Hesse *et al*. (2006) frames the economic argument for pastoralism by identifying the common preconceptions and misconceptions held by many decision-makers in Africa about pastoralists and their way of life. They also address the invisibility of pastoral contribution to the economy by attempting the segregation of economic statistics and employing economic valuations.

Manger and Ghaffar (2000) compile important information relevant to pastoral development based in a broader view of resource management covering issues facing pastoral and agro-pastoral societies in East African drylands. Muhereza (2004) reviews economic data to help understand the complex nature of the economic contribution of pastoralism in Uganda. The economic contribution is assessed using available national statistics, mainly GDP and export revenue earning.

Little *et al.,* address the processes of livelihood diversification among the pastoralists in the rangelands of northern Kenya and Southern Ethiopia, looking at income diversification among the pastoralists with reference to the current literature and databases and presents a case study on pastoral income diversification based on preliminary field researches and shows how. Comparative analyses in the region have been constrained by theoretical and data deficiencies. They explore ways in which income diversification differs by what are termed conditional, opportunity, and local response variables. Aklifu *et al*. (2002) appreciates market development as a key factor in ensuring success of other development programs in pastoral areas in Kenya, Ethiopia and Sudan. They seek a better understanding of how existing marketing systems function in the three countries, their key constraints and potentials, providing a simple descriptive account of how livestock, meat and hides and skins are marketed in the three countries.

Odhiambo (2006) conducted a study to collate and document information on economic valuations of pastoralism in the East African countries including Tanzania. He reports that in Tanzania, it is estimated that the pastoral economy is the basis of the livelihood of 10% of the

population. The vast tracts of land in Tanzania's arid and semi-arid areas are made use of by pastoralists, who are found in Manyara, Arusha, Dodoma, Singida, Shinyanga, and Mwanza Regions, though there are also pockets of pastoral communities, which have migrated to areas such as Morogoro, Pwani, Mbeya, Rukwa and Tabora. He notes that these groups are the backbone of Tanzania's livestock sector, owning approximately 99% of the livestock, while the big ranches and dairy farms own a mere 1%. Looking at the contribution of pastoralism to the Tanzania's economy, Madulu and Liwenga (2004) aggregated economic statistics such as the GDP and deductively estimated the portion attributable to pastoral livestock. This was done by looking at the conceptual analysis of what is meant by economic contribution and identifying and analyzing the type of information available in the country about economic contribution of pastoralism to local and national economies.

In the same line, Letara *et al*. (2006) studied the dynamics of the *nyama choma* sector in the Arusha municipality of Tanzania examining the contribution of *nyama choma* to the economy of the municipality. The study found that, the contributions of pastoralist production systems are substantial in both formal and informal economies and that the true economic worth of the *nyama choma* business sector is undervalued by the data collected through official channels noting that in the formal sector, pastoral production is visible at a national level through the fees and taxes collected at the livestock markets, livestock movement, medical examination and the market fees.

Recent studies on Usangu basin include those by Walsh (2007), Sosovele *et al*. (2006), Franks *et al*. (2004), Kadigi (2006). Walsh (2007) assessed the situation of pastoralists in Tanzania in the light of current and future policy and environmental changes; and identified practical responses that will help ensure pastoralism provides a sustainable livelihood to the millions of people who depend on it while contributing to the national economy of the country. In this study Warsh highlighted on the misconception by the government officials on the importance of pastoralism and its effects on the environment. He also indicates how political motives and powerful economic interests were used to twist issues against pastoralism in the *Ihefu* fracas. *Sosovele et al*. (2006), on the other hand, studying on socio-economic root causes of loss of biodiversity in the Ruaha Catchment Area focusing on the underlying policies, institutional dynamics, market forces and human actions driving biodiversity loss; how the root causes are interlinked. Sosovele *et al*. (2006) recommends an economic and environmental assessment of the large-scale rice irrigation farms in the Usangu Plains to determine if they are still economically justified, in the light of increasing costs of production and environmental degradation associated with this form of production.

According to Franks *et al.* (2004) Demand for water in the Usangu Basin is driven by a number of competing uses which include domestic supplies, irrigated agriculture, livestock, fishing, maintenance of the Usangu wetland, a National Park and major hydroelectric system downstream. As a result of a number of driving forces including the growing population, the water resources of the basin are becoming increasingly stressed, and downstream flows have now reduced to zero during the dry season (Faranks *et al.*, 2004). He notes that the various initiatives and developments demonstrate the problems of managing water amongst competing uses in situations such as Usangu and that the conflicting pressures of water for domestic purposes, irrigation, livestock watering, maintenance of the wetland and for downstream users mean that there are no simple solutions for allocating and managing water. Progress can only be made through the patient support and development of institutions such as the Water Managers' Group and the various sub-catchment groups described, working in a supportive and participatory process (Franks *et al.*, 2004).

Kadigi (2006) studied the livelihoods and economic benefits of the water utilization in the Great Ruaha River Catchment in Tanzania focusing on water based livelihoods, value of water and economic benefits and income distribution and poverty. He found that values of water for livestock, brick making and domestic uses are the highest, averaging at around USD 1 per $m^3$ of water consumed. He recommends raising awareness among water users, promoting good practices and ensuring active participation among the local communities in sustainable land and water resources management.

# 3 3.0 THE TOTAL ECONOMIC VALUE OF PASTORALISM

## 3.1 3.1 OVERVIEW OF THE TEV OF PASTORALISM IN TANZANIA

Using the existing information, in this section we present an assessment of the TEV of pastoralism and the way its different value components are treated in the computation of the national accounts of the national economy. This assessment is intended to show the significance of pastoralism in the country so as to position it in the national economy and review its contribution to the improvement of the overall livelihoods and reduction of poverty. Important aspects covered include values of marketed products, supplementary products, subsistence production, inputs to agriculture, tourist services and market chain linkages.

### 3.1.1 3.1.1 The value of marketed products

It is reported that the livestock sector contributes 13% to the agriculture GDP and 6.1% to the national GDP. The contribution of livestock to GDP is, however, considerably masked and seriously underestimated. The GDP only considers livestock and livestock product that are marketed. The value of most of the products coming from the extensive livestock system dominated by agro-pastoralists and pastoralists, comprising about 95% of the total livestock population is not reflected in the GDP. The national data do not distinguish the contribution of pastoralism from other forms of livestock production such as commercial ranching and smallholders as also noted by Odhiombo (2006). Odhiombo reports that national livestock production figures are rarely disaggregated in terms of smallholder farmers, pastoralists and large-scale farmers.

The contribution of pastoralism to the national economy of Tanzania is also largely invisible because the national statistics on livestock production are usually in terms of livestock products such as beef, milk, hides and skins, but these do not in themselves show adequately what comes out of the pastoral sector. The statistics do not include the number of live animals from the pastoral sector that are not slaughtered. Although the pastoral sector produces meat, milk and blood, most of them are usually consumed in the pastoral households. For instance, out of the total milk produced from the pastoral sector, it is only 5% to 10% that enters the commercial market by selling to consumers usually through middlemen (Mnenwa, 2005). Thus the main commercial outputs from the pastoral livestock system are live animals, hides and skins, and to a lesser extent meat and milk. By counting the quantity of meat only, it leaves out the livestock that is sold for other purposes, and therefore seriously underestimating the contribution of the sector. The national meat statistics also leave out the livestock that is sold informally to neighbours or livestock sold through cross border trade to neighbouring countries. This makes it difficult to figure out the significance of pastoralism to the national economy.

Another important contribution of pastoral systems that is always taken for granted is the foreign exchange savings from not importing meat. A direct result of the contribution of pastoralism to the national economy in Tanzania is the fact that the country does not import any meat, relying entirely on its national production to satisfy the demand for these products (Odhiombo, 2007). Increased domestic production reduces imports and save foreign exchange

that can then be diverted to other productive investments and indirectly contribute to food security. Pastoral communities supply more than 90% of the meat and milk that is consumed in the country.

### 3.1.2 3.1.2 The value of subsistence production

Though significant, subsistence production in the pastoral systems is one of the values that are not captured in the national accounts. Livestock has the ability to convert the otherwise under or non-utilised crop by products, grasses and fibrous forage of farms, and communal gazing areas into food and other useful products (Kassa, 2000)[9]. For pastoralists, not only livestock are a means of subsistence and prestige goods that enable individuals to establish social relations with other members of society, but also the animals enable individuals to establish and achieve mystic linkage with the supernatural. Being a provider of basic needs, pastoralists have developed a special attachment to livestock that outsiders find hard to comprehend.

Traditionally, pastoral diet consisted of the consumption of milk, purchased grain, meat and occasional blood. Although, nowadays, production of own crops (maize and beans) form part of the pastoral diet , milk and meat still play a substantial role in the pastoral diet. In Eritrea for instance the pastoralists derive more than 50% of their total food energy intake from livestock in the form of meat and milk. Milk is the most important animal product in pastoral societies and is needed every day. Tanzania produces approximately 1.18 billion litres of milk of which 70% comes from the agro-pastoral and pastoral systems. Most (nearly 90%) of the milk produced in the agro-pastoral and pastoral systems is usually consumed in the households.

Although the production figures for other products such as meat and blood are not available, it is known that almost all the meat and blood that are produced in the pastoral systems are all consumed by pastoral households. Increased livestock production adds to food security in three major ways (Sansoucy et al, 1995). First, poor pastoralists have direct access to more food of livestock origin, which has a direct impact on food and nutrient availability given that livestock products are both rich sources of protein containing a complete range of essential elements

[9] Habtemariam Kassa 2000:Livestock production, household food security and sustainability in smallholder mixed farms A case study from Kombolcha ***Woreda*** of Eastern Ethiopia

(Pootschi, 1986) and dense in energy, tasty, easily digestible and readily absorbable (Hufvander and Cameron, 1983).

The exclusion of the subsistence contribution of pastoralism in the national accounts is considered a serious omission. Although the National Livestock Policy (NLP) mentions subsistence as an important contribution of the livestock sector to rural livelihoods, it does not show how significant this is in relation to the national economy. Moreover the document does not acknowledge the differences in the importance of subsistence production for the various categories of livestock production systems i.e. pastoralism, ranching and smallholders. While subsistence production may be important for both smallholders and pastoralists, it is more of life for pastoraslists than for smallholders.

### 3.1.3 3.1.3 The value of inputs to other sectors of the economy

While livestock produce a myriad of goods and services for household livelihoods such as meat and milk, they also provide draft, transport and are a source of manure for crop production. The use of inputs from livestock in crop production is regarded as an important strategy for efficient utilization of resources from the livestock sector. It is argued that adequate use of inputs from livestock can be an effective way of promoting agricultural production because it provides cheap inputs. For instance, in SSA 13 million cattle, 6 million equines and 5 million camels provide draught power for land cultivation, threshing, water lifting, and transport of people and goods (Jahnke, 1982); and at present the use of animal traction for crop cultivation is widespread in Ethiopia, Botswana, Madagascar, Niger, Burkina Faso, Mali and Senegal (Gryseels, 1988). In Tanzania, the 2002/03 National Sample Census of Agriculture shows that almost a quarter of crop growing households in Tanzania are using draft animals for cultivation. According to the census, some regions in the mainland have more than 45% of the crop growing households using draft animals for cultivation.

The use of animal power in crop production substantially reduces human drudgery and allows an increase in the cultivated area. Compared to hand hoes, ploughing with animals may also increase yield per unit area, particularly in moisture stress areas by improving soil structure thereby facilitating water infiltration. These conditions allow farmers to gain increases in labour (Gryseels, 1988) and farm productivity (ILCA, 1987; Bekele, 1991). Animal traction is one of the major sources of power in the Tanzania's smallholder agriculture and its increased use in the past two decades indicates that it is an acceptable, affordable and sustainable technology, though the utilization of draught animals in the country is mainly confined to conventional tillage

using mouldboard ploughs and to limited extent transportation (Shetto, 2005). Shetto further explains that despite Tanzania having a big cattle herd of more than 16 million, only 1.2 million are employed for draught purposes implying that more animals may be used in agricultural production. It is estimated that there are approximately 2 million mature steers that can be trained for draught purposes, the employment of which may put more than 2 million hectares under crop production. This would highly improve the household food security, increase incomes of the rural population, reduce poverty and contribute to the economic development of the country.

The existing and potential contribution of animals to agricultural development and the overall economy are among those pastoral contributions that are not accounted for in economic terms. However, the understanding of these contributions remains a pre-requisite for proper designing of livestock development strategies that address real problems and/or exploit the potential of pastoral production systems. The ignorance of the contribution of pastoral production systems to agricultural production in terms of source of power and manure is a killer assumption that may lead to formulation of policies that do not reflect the significance of the production system and address the real issues and constraints facing it.

Apart from providing inputs to the agricultural sector, the pastoral system also impact on the growth of other sectors including the hotel industry which largely depend on livestock products especially meat from the pastoral system as most of the animals slaughtered in urban butchers and abattoirs originate from the pastoral and agro-pastoral systems.

### 3.1.4 3.1.4 The value of supplementary products

Many pastoral areas are endowed with a number of forests and grasslands with a variety of natural resources such as wild animals, insects, trees, grasses and birds. Owing to these resources many pastoral areas have been prone to government interventions, converting most of the areas into game reserves, national parks and conservation areas. Not only has this process led to the reduction in pasture land sizes for pastoralists but also it has denied them from using the other natural resources for production purposes. There are many products that come from pastoralist lands. Many of these products, such as Gum Arabic, honey and medicinal plants have a high value on global markets (Hatfield, 2006). These products are passively managed by pastoralists and have, over the years gained experiences in tapping them. For Gum Arabica for instance, the main challenge is in the cost-effective and timely harvest of gum, a role in which

pastoralists are well suited to due to local knowledge of tree conditions over a wide area, and the fact that these activities can be carried out in conjunction with herding (Hatfield, 2006).

Chihongo (2000) notes that Gum Arabic is mainly produced from *Acacia Senegal* and *Acacia seyal* plants. Tanzania indigenous forests cover some 401,600 sq. km. of which 75% is composed of different shades of miombo and Acacia woodlands (EC/FAO, 1999). The arid areas including Tabora, Singida, Arusha, Kilimanjaro, Tanga, Morogoro and Iringa; contain vast areas of Acacia woodlands. Chihongo (2000) estimated that Tanzania produces approximately 1000 tons of Gum Arabica per year, half of which is informally exported. Tanzania has a very huge export potential for Gum Arabic. The main traditional producer Gum Arabica has been Sudan, which realized US $50 million on average each year from 1979-1991 (Hatfield, 2006). Somo (2006) reports that the demand has always outstripped supply, and Chad and Nigeria are now making concerted efforts to engage in the trade. In addition, Tanzania possesses big areas (especially the Eastern Arc Mountains) with *Sterculia quinqueloba* tress, used to produce "Karaya gum" which has a huge export market. Currently Malawi is one of the countries that are exporting Karaya gum (Munthali, 2000).

Honey is another important product pastoralists have a comparative advantage to produce. Pastoralists are in the best position to exploit honey harvesting opportunities due to local knowledge and cost-sharing in terms of harvesting time over large areas. Tanzania has a high potential of beekeeping activity that places its bees wax and honey at a stable market position (EC/FAO, 1999). The country produces about 138,000 tones of honey and 9,200 tons of bees' wax per year from about 9.2 million honey bee colonies (MNRT, 2000). In Tanzania beekeeping and honey hunting in miombo woodlands can be an especially lucrative enterprise (Dewees, 1996). The production of honey and bees' wax serves as a poverty reducer in rural areas. Most of the honey and bees' wax produced is consumed locally and only small amounts are exported to Germany, Japan and the U.K. (FAO, 2000).

Apart from local knowledge, one of the important roles to be played by pastoralists is in ensuring sustainable harvest of plants since this sector is susceptible to unlicensed over-exploitation by outsiders (Hatfield, 2006). Due to its rich biodiversity, Tanzania has the potential to deliver many varieties of products in the form of wood and non-wood products in the domestic and external trade markets. Although Tanzania has a variety of plants that are used as medicinal, the trading pattern is still internal and very scanty data is available for external trade (EC/FAO, 2006). Economically, medicinal plants function well to a good number of people. The increasing number of herbalists and the establishment of medicinal plants section in

the Muhimbili National Hospital indicate the importance of medicinal plants in the society, this contribution is also neglected in the government livestock policy.

### 3.1.5 3.1.5 The value of tourist services

Tourism is among the economic sectors with greatest growth potential in Tanzania. Tanzania's tourism potential extends from her wildlife resources, a spectacular landscape and scenery, water bodies and beaches, a diversity of culture, to numerous archeological sites. Trends in the performance and growth of tourism in Tanzania (Curry, 1986; Wade *et al.*, 2001) show that for the last decade, tourism has grown to be an important sector in Tanzania. As a share of total exports, tourism earnings increased from 15% in the 1980s to over 40% in the 1990s, becoming the second largest foreign exchange earner after agriculture. Tourism earnings as a share of GDP increased significantly, from about 1% in the 1986-92 period to over 6% in the 1993-98 period and 16% in the 2000s period; one of the highest in SSA countries (see WTO, various years).

**It is apparently notable that the role of pastoralism in tourism industry is always not acknowledged and promoted. Pastoral systems contribute to tourism through many ways but three obvious aspects are wildlife tourism, cultural tourism, and aesthetic landscape. Significant data exists in the African context that pastoralists have been living in wildlife areas time in memorial, and it is "acknowledged that wildlife populations are not viable if confined to protected areas and that in fact they utilize and rely on pastoral lands as an integral part of their existence" (AWF, 2006). In addition, there is now substantial literature that shows that livestock grazing confers significant benefits to wildlife in terms of maintaining or enhancing biodiversity, and the ecosystem services that support such biodiversity, including water and nutrient cycles (Hatifield, 2006). Incorporating local communities into conservation is an alternative to the more traditional fortress conservation approach to conserving biodiversity (Holmes 2003, Western and Wright 1994; Hulme and Murphree, 1999). Sachedina (2006) reports that community based conservation has the potential for success when it offers alternative uses of natural resources as sources of tangible incomes to local communities.**

Hatfield (2006) reports that cultural tourism is an increasingly important aspect of the tourist industry as traditional cultures evoke significant interest globally, as attested by the appreciation for and knowledge of the Maasai of Kenya and Tanzania, the Dinka of Sudan, the

Tuareg of West Africa, the Bedouin of North Africa and the Middle East, Mongolian herders and the Pashtan of Afghanistan, for example. The significance of this value is illustrated by the amount of advertising for wildlife safaris in Kenya and Tanzania that utilises Maasai images and citations, where the image of the traditional pastoralist has become an icon (Hatfield, 2006).

As with wildlife, aesthetically valued landscapes are of great value to the tourist industry and can be enhanced and protected by pastoralism. The most diverse and complex grassland savanna ecosystem in the world extends through the Maasai Steppe in northern Tanzania (Coe, McWilliam *et al.,* 1999; Olson, Dinerstein *et al*., 2000). Of particular importance are grazing and calving areas in the Simanjiro Plains, where thousands of wildebeest (C*onnochaetes taurinus)*, zebra (*Equus burchelli*) and elephant (*Loxodonta Africana*) congregate during the wet season. Conservation of the ecosystem's migratory wildlife populations largely depends on maintaining these habitats on communally owned lands (Borner, 1985; Kahurananga, 1997; TCP/OIKOS 1998). In such cases the pastoralism provides natural resources conservation and management services, although in Tanzania the service is not remunerated and the role played by grazers is entirely ignored. Most frequently they are blamed for land overgrazing, land degradation and destruction of fauna and frola.

### 3.1.6 3.1.6 The value of market chain linkages

The rapidly increasing proportion of the population that lives in urban centres is generating a growing demand for livestock products: particularly milk and meat. Tanzania is self sufficient in meat. The livestock sector as a whole in Tanzania is the greatest contributor to the national supply of protein. Annual red meat production in the country is estimated at approximately 259,800, metric tons out of which 98% is produced from livestock bought from pastoral areas, while only 2% comes from the national ranches and smallholder producers. Thus pastoral production systems are a hub of the beef market chains in the country. Beef market chains encompass primary markets, secondary markets, meat butchers and shops and *nyama choma* businesses. Trading and value addition along the supply chain contributes to a large number of livelihoods, covering costs and even providing profits for each participant.

Let us use the example of *nyama choma* business. Letare *et al*. (2006) studied the *nyama chama* business in Arusha region and found that there are many benefits from livestock and the nyama choma sector. They report that the distribution of benefits varied from one stage of the supply

chain to another. The supply chain begins with the pastoralists who keep the animals. Cattle are one of major assets of pastoral communities in northern Tanzania. They provide milk and blood, but also cash to buy cereals and other goods and services while providing an inflation-free store of value. Pastoralists sell their livestock at markets. Young pastoralist men often play the role of middlemen between livestock markets, buying animals on one market, to sell them at a profit on another. The supply chain then moves to the middlemen who buy livestock from the pastoralist traders, slaughter the animals themselves or sell the animals to the abattoir or other places of slaughter. For the middlemen involved in meat production activities, this trade is their major source of employment and commercial investment. When an animal is slaughtered, nothing is wasted, with different parts being sold to different customers. Household consumers (those buying meat for home use) as well as those buying prepared meat for nyama choma businesses buy the meat from the abattoir.

Lerate *et al*. (2006) explains that if these data can be generalised for Tanzania as a whole, the population of 33.6 million is serviced by 15,585 nyama choma businesses with a supply chain-wide turnover of 1,353 billion Tshs (USD 1.3 billion) and value-added to the national economy of 23 billion Tshs (USD 22 million). Furthermore, outside pastoralism, each pastoral cow slaughtered supports (through the *nyama choma* supply chain) at least one-quarter of a full-time job in the Tanzanian economy, accounting for 1.07 dependents, and providing an estimated USD 172 worth of economic value-added in the economy. In pastoral society, each pastoral cow slaughtered supports (through the *nyama choma* supply chain) at least three-fifths of a full-time job in the Tanzanian economy, accounting for 2.91 dependents.

### 3.1.7 3.1.7 Return-on investment

**The livestock industry can be categorized into two major production systems namely extensive and intensive. The intensive system, though limited in size, has been receiving more emphasis in investment and improvement because of its contribution to the market oriented economy. On the other hand, the extensive system, which is mostly agro-pastoralism and pastoralism, is a production system based on seasonal availability of forage and water thus resulting into uncontrolled mobility. This system is mostly constrained by poor animal husbandry practices, lack of modernization, accumulation of stock beyond the carrying capacity and lack of market orientation. Despite of the constraints this system has sustained the livelihood of the pastoral communities for many decades.**

Since mid 1980's, Tanzanian economy has been undergoing gradual and fundamental transformations towards a market-based economy. The macro-economic policy reforms have made necessary for a redefinition of the roles of the public and private sectors in livestock development. These changes have paved the way for the withdrawal of the Government involvement in direct production, processing and marketing activities, which could be better performed by the private sector.

Even after these reforms the government's view over agro-pastoralism and pastoralism has not changed much. Although the Agricultural and Livestock Policy of 1997 was in line with the ongoing reforms and redefined roles of public and private sectors; it did not articulate how the traditional sector could be developed. During the implementation of this policy other reforms emerged thus demanding for a review and formulation of a new policy. The new policy has been prepared but again it lacks clear policies on agro-pastoralism and pastoralism as it has tended to take these as ordinary livestock production systems. The fact that pastoralism is both a way of life and a resource management system is not taken aboard by the policy. The policies have been formulated on the basis that pastoralism is a production system for meat and milk, the assumption which is not realistic because pastoralism produces more than milk and meat.

### 3.1.8 Household Livelihoods

Like the contribution to GDP, the contribution of pastoralismivestock to livelihoods of households is also highly understated when estimated using official income data obtained from the livestock products from the pastoral livestock system that are marketed. Livestock incomes that are reported in official statistics represent a relatively small proportion of the wider contribution of pastoralism to livelihoods of various households people in Tanzania. Livestock keepers in Tanzania especially the pastoralists and agro-pastoralists keep their livestock for the multiple contributions they make to their livelihoods. Apart from livestock valued for the products they provide directly, including meat, milk, manure and draught power as described above, livestock in the pastoral system contribute to livelihoods of households through the following:

- Maintaining social capital. Livestock are frequently shared, borrowed, given as gifts and slaughtered for a range of ceremonies and occasions which are often seen as "unproductive" but in practice are highly valued for their ability to secure social capital which can play an important role in future livelihoods security especially for the vulnerable households.

- Providing security: livestock may be sold when something goes wrong and when money is required urgently, for example to pay for medical costs when a family member falls seek. In such cases the livestock plays the role of contributing to the sustainability of people's livelihoods by making available lump sums of money when need arises.

- Accumulating assets: One of the routes out of poverty pursued by the poor is to progressively accumulate assets such that they no longer need to be sold to ensure livelihood security, and therefore become productive and contribute to enhancing livelihood status. Livestock accumulation is a key objective for most rural households, and for many this begins with a process of acquiring small animals, increasing their numbers and sequentially trading up to larger species.

- Financing planned expenditures: Livestock are a key source of funds for expenditures in many rural areas of Tanzania. Regular or small expenditures such as for medicines, food or seed can be financed by selling a goat. Larger expenditures such as purchasing land, a house, starting a small business, paying school fees or making a dowry payment can be made through sale of larger numbers of smaller animals or fewer large animals such as cattle.

Through the roles described above, livestock is an important source of livelihood to the majority of the rural community in Tanzania. For the pastoral community, which owns more than 95% of the livestock population in Tanzania, it is estimated that the pastoral economy is the basis of livelihood for more than 10% of the human population in Tanzania. These are found in arid and semi-arid areas of Tanzania including Manyara, Arusha, Dodoma, Singida, Shinyanga, and Mwanza Regions. There are also pockets of pastoral communities, which have migrated to regions such as Morogoro, Coast, Mbeya, Rukwa and Tabora.

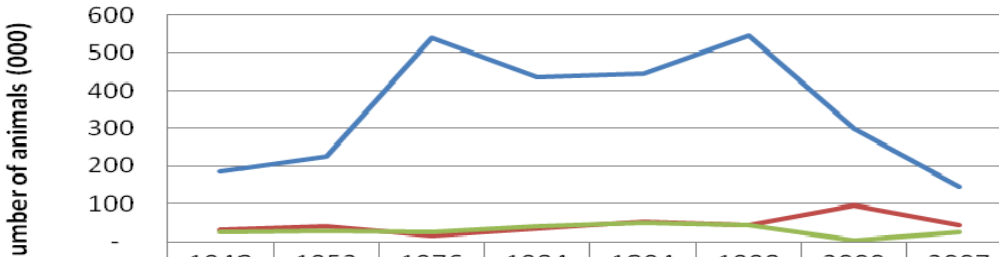
## 3.2 3.2 TEV OF PASTORALISM: THE CASE OF USANGU BASIN

In this section, we present the results of a case study of TEV of pastoralism in Usangu basins. The case study approach was intended to provide a means for providing a greater level of detail and insight about the economic values of pastoralism discussed in the previous section.

### 3.2.1 3.2.1 Livestock in the Usangu Basin: An overview

Livestock are a traditional component of Usangu indigenous production systems (Wilson, 2003). The Sangu people were keeping large herds of cattle in the Usangu plains in the second half of the 19th and the first half of the 20th Centuries. It is reported that at least 90% of these animals were lost in the years preceding the turn of the 20th Century as the first devastating rinderpest pandemic swept through the whole of continental Africa's previously unexposed and entirely susceptible cattle population (Mack 1970). The number of cattle in the Usangu plains has never been able to recover completely to their former level, until early 1950s when immigrant herders and especially the Masai from Arusha, Dodoma and Tanga Regions began to arrive in the Usangu Plains. The immigrants brought with them some cattle, sheep and goats. For some years that immigrant numbers remained low but further influxes of herders, mainly Sukuma from Mwanza, Shinyanga and Tabora Regions, in the 1970s and the 1980s led to a massive increase in livestock numbers (Wilson, 2003). Correspondingly, the number of livestock built up from the low levels of, for instance, about 200,000 cattle in 1950s to more than 500,000 cattle in 1990s. The number of goats and sheep, however, did not increase significantly.

**Figure 2: Changes in livestock population between 1948 and 2007 in Usangu Plains**




| | 1948 | 1953 | 1976 | 1984 | 1994 | 1998 | 2000 | 2007 |
|---|---|---|---|---|---|---|---|---|
| Cattle | 187 | 226 | 542 | 438 | 447 | 548 | 301 | 146 |
| Goat | 32 | 39 | 16 | 34 | 53 | 43 | 95 | 42 |
| Sheep | 24 | 28 | 24 | 39 | 49 | 44 | 3 | 24 |

In the 1990s, the increase in livestock numbers started to draw attention of politicians, environmental activists and other users of the Usangu plains resources. Important to note is the perceived threat of the pastoralists other economic interests. The growth of livestock activities in the areas were perceived as (1) an interference to game reserve and hunting activities; (2) a source of land degradation due to overgrazing; and (3) a source of competition for water with other users such as hydropower generation. Despite the economic importance of pastoralism and the possibility of introducing a resource management system that could allow the co-existence of pastoralism with other subsystems, the three perceived interests were used by the government to

justify a controversial eviction of the pastoralists from the Usangu wetlands. Resulting from the eviction is the drastic reduction in the livestock population in the plains as noted in Figure 1.

### 3.2.2 3.2.2 Value of marketed products

An assessment was made during this study regarding the value of marketed livestock products in Usangu plains. The main marketed livestock outputs of Usangu pastoral system are mainly live animals, meat, milk, eggs, hides and skins. It is estimated that livestock production ranks the second in GDP contribution in Mbarali district, in which Usangu plain is located. Since about 90% of the livestock contribution comes from pastoralism, then the contribution of pastoralism to the economy of the district is considerably high. The information collected from the DALDO Mbarali shows that the number of live animals sold from the pastoralists in Mbarali district from January to September 2007 stood at approximately 27,000 cattle, 1,100 goats and 500 sheep with a value of approximately Tshs 4.5 billion. To support this information, some households were requested to indicate the number and value of animals they sold through the primary markets. Table 2 shows that the interviewed households who marketed live animals in 2007 sold between 2 and 160 cattle, 3 and 130 goats, 1 and 40 sheep, 2 and 60 chicken and 1 and 2 donkeys. The Table also shows the average household sales and value for each type of animal and other products.

Table 2: Marketed livestock products from pastoral households in Usangu plains

| Product type | Minimum (n=30) | Maximum (n=30) | Mean (n=30) | Median (n=30) | Std deviation (n=30) |
|---|---|---|---|---|---|
| Live animals: | | | | | |
| Cattle | 2 | 160 | 24 | 5 | 51 |
| Goats | 3 | 130 | 29 | 5 | 47 |
| Sheep | 1 | 40 | 11 | 3 | 14 |
| Chicken | 2 | 60 | 20 | 17 | 18 |
| Donkeys | 1 | 2 | 2 | 2 | 1 |
| Milk (litres) | 0 | 1812 | 597 | 0 | 770 |
| Hides (pcs) | 1 | 10 | 5 | 3 | 4 |
| Skins (pcs) | 2 | 20 | 7 | 5 | 6 |
| Value (Tshs 000) | 96 | 34,690 | 4,638 | 1,531 | 10,041 |

Reliable statistics on traditional herd milk production in Usangu region are not readily available as the available data from DALDO do not separate milk produced from indigenous cow from

the milk produced from the improved dairy herd. Studies (MOA/SUA/ILRI, 1998) assume that for any given herd of indigenous cattle only about 35% are breedable traditional cows, with a calving rate of 60% producing an average of 183 litres per year per cow. Applying these parameters to Mbarali estimates, the total milk production figures in Mbarali district are estimated at 5,756,083.83 litres out of which approximately 576,000 litres, valued at Tshs 172,682,000 are marketed. The livestock keepers that were consulted confirmed that they get substantial income from milk sales. Table 2 shows that households sell an average of 597 litres of milk per annum earning them an average annual income of Tshs 179,100 per annum. To a lesser extent, other sources of income from livestock marketed products include hides and skins.

It is important to note that these statistics relate to the situation after the implementation of the eviction of pastoralists from Usangu plains to Lindi and other places, a process which must have impacted on the production system in terms of livestock and product levels. DALDO Mbarali (2007) estimates that approximately 130,000 cattle, 4,600 goats, 14,400 sheep and 500 donkeys had been shifted to Lindi and Kisarawe since 2006.

### 3.2.3 3.2.3 Value of subsistence production

As pointed out above, subsistence production in the pastoral systems is one of the values that are not captured in the national accounts. Apart from cash income generation, livestock provide livestock keepers with food, prestige and social status. There are no official statistics on the household meat consumption in the pastoral systems, but it is known that almost all the meat and blood that are produced in the pastoral systems are all consumed by pastoral households, while 90% of the milk produced (approximately 5.2 million litres) valued at Tshs 1.6 billion is consumed within the pastoral households. To support this information the respondent pastoralists were asked to explain on how livestock was important for their subsistence. They pointed out that milk and meat were important components of their diet. The respondents reported that they slaughtered on average 8 cattle, 7 goats, 7 sheep and 39 chicken annually for their household consumption and traditional ceremonies. They also reported that their average household milk consumption stood at 2,422 litres per annum. Measured in monetary terms the household average value of all the household consumed livestock products is estimated at Tshs 2,768,000. Generalized for the whole district with approximately 3,000 livestock keeping households the value of subsistence production comes to TShs. 7.3 billion.

### 3.2.4 3.2.4 Value of inputs to agriculture

The contribution of livestock to agriculture is considerably high, though has always been undervalued. Livestock contributes to agriculture in Usangu plains through mechanisation and usage of manure. DALDO Mbarali (2007) estimates that Mbarali district has 9,000 draught oxen or 4,500 oxen pairs. The cost of hiring a tractor for ploughing, including fuel, is Tshs 25,000/= per acre (Tshs 62500/ha). Assuming that each oxen pair ploughs 15 acres or 6 ha per annum, the total value of ploughing is Tshs 1.7 billion. Other work in seeding, harrowing and transport may be equivalent to this amount. Each of the respondents that were interviewed reported having at least a pair of oxen and ox ploughs, and most of the land owned by the households was cultivated using ox ploughs.

Although many households do not apply manure in their farms, its value is also considerable as N, P and K returned to the soil plus improvements in soil structure and water holding capacity. Almost all of the respondents indicated that they usually graze their animals in the crop fields after harvesting, which is one way of returning manure to the crop farms through fresh manure and urine that are produced by the animals when grazing.

### 3.2.5 3.2.5 Value of complementary products

The Usangu plain is endowed with natural resources including trees with flowers, water bodies, animals and insects from which a number of valuable products can be produced including gum Arabic, honey and medicinal plants. Beekeeping is one source of income in Mbarali district. Mbarali district ranks the second as honey and beeswax producer in Mbeya Region. Half of the land area of Mbarali district is covered with forests and Savanna woodlands (Miombo). The forests and woodlands are suitable for bee keeping. The key informants that were consulted during this study estimate that Mbarali district has about 100 households involved in bee keeping who produce 120 tons of honey and 8 tons of bees wax per annum valued at Tshs 180 million and Tshs 24 million, respectively. Apart from financial benefits, beekeeping plays an important role in environmental conservation. Bees are known for facilitating pollination and maintenance of genetic pools and continuation of species, especially of natural forests.

Usangu plain has a great potential for gum Arabic production. The information generated from group discussions with livestock keepers and through consultation with the government officials, Mbarali district is endowed with a variety of species of useful plants including acacia trees, which could be a good source of gum Arabic. It was learnt that much focus of the government

has been on fuel and timber production and the tendency has been to undermine indigenous knowledge and products. Local knowledge and useful products have not been given a priority in research and policy agenda in the district and because of this, production of important products such as gum Arabic is virtually nonexistent. The livestock keepers who were consulted indicated that they have knowledge on most of the plant species and their uses including production of gums, but are not doing it because no markets for the products have been identified.

Usangu plain has a variety of plants that are used as medicine. Economically, medicinal plants function well to a good number of people. Although there are no data on the production of medicine from plants in Mabarali district, the information obtained from the respondents for this study indicate that the use of medicinal plants provides the people with an opportunity to save money, earn cash and save lives. Official statistics on the quantity of the medicine produced and marketed could not be obtained, but the respondents indicated that pastoral households are able to save amount of money ranging from Tshs 36,000 to Tshs 1,000,000 per annum or an annual average saving of Tshs 347,000 from using medicinal plants to cure diseases.

### 3.2.6 3.2.6 Value of tourism services

Mbarali district is endowed with natural attractions including wildlife at Utengule Swamps and waterfalls at Igurusi Village on Igurusi escarpment. Despite the fact that, the Mbarali district has potential areas and sites for tourist development, this industry has not been developed enough to capture the market. Recently the Ruaha National Park has been expanded to include most of these areas and all the economic activities including game and tourist hunting have been stopped.

While pastoralists could play a role in the tourism industry as tourist attraction, conservers of wildlife and forests, this has not been given a priority in research and policy. Instead, pastoralists have always been blamed for destruction of natural resources, despite many research findings, which show that they could play an important part in the natural resource management. The eviction of pastoralists from the Usangu wetlands and the nearby villages is one of the outcomes of the misconceptions of the roles of pastoralism in tourism. The eviction of pastoralists from the wetlands with an objective of expanding a national park intended for tourism defeats its own purpose, as pastoralists are known for their being one of the important tourist attraction let alone their role in wildlife and forest conservation.

An example of how pastoralism could contribute to tourism development was found at Matebete village, where cultural tourism was tried by some Maasai. The Masai have preserved some tourist attractions including traditional Maasai houses, forest reserves and water sources. They also offer other cultural tourist attractions such as traditional dancing and songs, traditional commodities such as *shanga*, spears, traditional medicine and decorative items. The village leaders reported that such tourist activities could earn the village some money if were adequately promoted. Apart from paying a tour fee of Tshs 10,000/ per head, tourists buy some commodities from the villagers especially *shanga*, decorative items and medicines. This year the village received nine tourists earning the village Tshs 90,000/ from tour fees alone.

### 3.2.7 3.2.7 Valued of market chains linkages

The available information shows that Mbarali district livestock supply chain has 9 livestock primary markets, 11 slaughter slabs, five abattoirs, and approximately 80 *nyama choma* businesses. The livestock supply chain begins with the pastoralists who keep the animals. Pastoralists in Usangu plains sell their livestock at the primary markets to middlemen who buy livestock for slaughter or re-sell the animals to abattoirs or other places of slaughter. The meat from the slaughtered animals is sold to different customers including household users and *nyama choma* businesses. Table 3 shows the quantity of meat from various types of animals produced in the district. The table shows that annual red meat production in the district is estimated at approximately 259,800, metric tons out of which 99% is produced from livestock bought from pastoral areas, making it a hub of the meat market chains in the district. Trading and value addition along the supply chain contributes to a large number of livelihoods, covering costs and even providing profits for each participant. Table 3 summarizes the estimated distribution of benefits along the supply chain.

Table 3: Distribution of benefits along the meat supply chain in Usangu plain

| Chain level | Quantity | Purchase price | Value Tsh mil | Sale price | Revenues Tshs mil | Profit margin Tshs mil |
|---|---|---|---|---|---|---|
| **Middlemen:** | | | | | | **163** |
| Cattle | 6,353 | 160,000 | 1,016 | 180,000 | 1,144 | 127 |
| Goats | 3,376 | 16,000 | 54 | 25,000 | 84 | 30 |
| Sheep | 700 | 13,000 | 9 | 22,000 | 15 | 6 |
| **Butchers:** | | | | | | **351** |
| Beef (kgs) | 759,859 | 1,600 | 1,216 | 2,000 | 1,520 | 304 |
| Goat meat (kgs) | 46,589 | 1,700 | 79 | 2,500 | 116 | 37 |
| Mutton (kgs) | 11,480 | 1,600 | 18 | 2,500 | 29 | 10 |
| **Nyama choma:** | | | | | | **847** |
| Beef (kgs) | 146,000 | 2,000 | 292 | 5,000 | 730 | 438 |
| Goat meat (kgs) | 116,800 | 2,500 | 292 | 6,000 | 701 | 409 |
| **TOTAL** | | | **2,977** | | **4,339** | **1,362** |

Source: Various DALDO's Mbarali quarterly reports, 2007

Table 3 shows that the participants in the meat supply chain earn approximately 1.4 billion per annum distributed as 163 million to middlemen, 351 million to butchermen and 847 million to *nyama choma* businesses. The meat supply chain also supports approximately 200 people with a full-time job which would earn them approximately 60 million per annum.

## 4.0 SYNTHESIS AND RECOMMENDATION

### 3.3 4.1 SYNTHESIS

This study was a response to the continued lack of understanding and the consequent marginalization of the pastoral communities in many parts of Tanzania. The review of the literature on methodologies that are usually used in economic analysis indicate that some of the misconceptions and the persistent under-valuation of pastoralist goods and services is associated with the use of the conventional concepts of economic value that have usually been based on weak sustainability view, which naturally leads to a very narrow definition of benefits. Economists view the value of natural eco-systems such as pastoralism only in terms of the raw materials and physical products that they generate for human production and consumption, especially focusing on commercial activities and profits. These direct uses represent only a small

proportion of the total value of pastoralism, as it generates economic benefits far in excess of just physical or marketed products.

Most of the economic evaluation use weak sustainability measures (mainly GDP and NNP) that were designed principally to monitor temporal changes in aggregate economic activities. The measures were never intended to be effective measures of wealth and societal welfare because they do not account for (i) the value of natural resources and changes in environmental and resource conditions upon which all production ultimately depends; (ii) subsistence activities because they focus on production of market goods and services; (iii) equity or distribution aspects of production activities. These three aspects are crucial for sustainability of economic systems and pro-poor economic growth.

Owing to the weaknesses inherent in the conventional measures of economic values, alternative concepts are being sought to account also for natural resources and indirect use values, drawing from strong sustainability school of thought which emphasize on the maintenance of different forms of capital. This means (1) the physical quantity of natural resources must not change; (2) the unit value of the natural capital must not change; and (3) the value of the resource flows from natural capital must not change. The total economic value (TEV) concept is a product of the efforts to capture all the economic values for not only man made capital assets but also the natural resources. The approach also attempts to include non-marketed goods and services in economic analysis. The use of TEV approach, surely enables a holistic assessment of all the critical values of eco-systems and could be an important tool for generating information for policy makers and overall framework for decision-making and pro-pastoralist policy dialogue.

The review of past studies on pastoralism have shown pastoralism plays an important role economic development and poverty reduction. The studies have further shown that there has been misconception of pastoralism by the government officials on the importance of pastoralism and its effects on the environment. Due to these misconceptions and undervaluation of pastoralism, pastoralism has received little attention from the government in its development agenda. In the Usangu Basin, for example, the undervaluation and misconception have paved way for political motives and powerful economic interests to influence the government to evict pastoralists from *Ihefu* swamp, despite many studies which showed that alternative strategies were possible. The studies highlighted on the need to appropriate implement strategies for sustainable use of Usangu plain resources. The studies have shown that managing water amongst competing uses in situations such as Usangu and that the conflicting pressures of water for

domestic purposes, irrigation, livestock, maintenance of the wetland and for downstream, call for support and development of institutions that promote participatory resource management.

The contributions of pastoralist production systems are substantial in both formal and informal economies and the true economic worth of the *pastoralism* is undervalued by the data collected through official channels noting that in the formal sector, pastoral production is visible at a national level through the fees and taxes collected at the livestock markets, livestock movement, medical examination and the market fees.

We argue that these statistics tell only part of the actual contribution of the sector, as they only cover commercial goods and services for the sector. Important contribution of pastoral systems that is always taken for granted is the foreign exchange savings from not importing meat, subsistence production, inputs to agriculture, supplementary products, tourism services and supply chain linkage.

Tanzania produces approximately 1.18 billion litres of milk of which 70% comes from the agro-pastoral and pastoral systems. Most (nearly 90%) of the milk and all the meat and blood produced in the agro-pastoral and pastoral systems are usually consumed in the households. Apart from meat and milk, livestock also provide draft power for cultivation and transport and are a source of manure (i.e. fertilizer) for crop production. Out of the 16 million cattle, only 1.2 million are employed for draught purposes implying that more animals may be used in agricultural production.

Many pastoral areas are endowed with a number of forests and grasslands with a variety of natural resources such as wild animals, insects, trees, grasses and birds from which supplementary products can be produced. Many of these products, such as Gum Arabic, honey and medicinal plants have a high value on global markets. Tanzania indigenous forests cover some 401,600 sq. km. of which 75% is composed of different shades of miombo and Acacia woodlands. The arid areas including Tabora, Singida, Arusha, Kilimanjaro, Tanga, Morogoro and Iringa; contain vast areas of Acacia woodlands and Tanzania produces approximately 1000 tons of Gum Arabica per year, half of which is informally exported. Tanzania has a very huge export potential for Gum Arabic. In addition, Tanzania possesses big areas (especially the Eastern Arc Mountains) with *Sterculia quinqueloba* tress, used to produce "Karaya gum" which has a huge export market. Tanzania has also the potential to produce honey which pastoralists have a comparative advantage to exploit due to local knowledge. The country produces about 138,000 tones of honey and 9,200 tons of bees' wax per year from about 9.2 million honey

bee colonies. Pastoralists have great comparative advantage in the production of traditional medicine from the medicinal plants from their areas, though the trading pattern is still internal and very scanty data is available for external trade. This implies that the importance of medicinal plants in the society, this contribution is also neglected in the government livestock policy.

Tourism is among the economic sectors with greatest growth potential in Tanzania. Tanzania's tourism potential extends from her wildlife resources, a spectacular landscape and scenery, water bodies and beaches, a diversity of culture, to numerous archeological sites. It is apparently notable that the role of pastoralism in tourism industry is always not acknowledged and promoted. Pastoral systems contribute to tourism through many ways but three obvious aspects are wildlife tourism, cultural tourism, and aesthetic landscape.

The study has shown that pastoralism is a hub of meat supply chain in the country. Annual red meat production in the country is estimated at approximately 259,800, metric tons out of which 98% is produced from livestock bought from pastoral areas, while only 2% comes from the national ranches and smallholder producers. Trading and value addition along the supply chain contributes to a large number of livelihoods, covering costs and even providing profits for each participant.

The field survey carried out in the Usangu plain in December 2007 has shown that the main marketed livestock outputs of Usangu pastoral system are mainly live animals, meat, milk, eggs, hides and skins. Livestock production (90% is pastoralism) ranks the second in GDP contribution in Mbarali district, in which Usangu plain is located after crop subsector. In 2007, the pastoralists earned more than Tsh 5 billion from sell of live animals alone and Tshs 172,682,000 from milk. If other contributions of pastoralism were included in the calculation of GDP, such as value of subsistence production, value of inputs to agriculture, value of complementary products, value of tourism services and value of market chain linkages, the contribution of livestock subsector would possibly be higher than that of agriculture.

Measured in monetary terms the value of subsistence production has been estimated at 7.3 billion (i.e. Tshs 1.6 billion from milk and 5.7 billion from meat and other products such as hides and skins); while the value of inputs to agriculture have been estimated at Tshs 1.7 billion from ox plough cultivation. This value excludes use of manure whose data could not be obtained. Other values include Tshs 180 million and Tshs 24 million, respectively from honey and bee-wax.

The value of other products such as Gum Arabic are not included because the product is for time being not produced, though the potential is high. The production and value of medicinal plants could not be availed but the respondents indicated that pastoral households are able to save amount of money ranging from Tshs 36,000 to Tshs 1,000,000 per annum or an annual average saving of Tshs 347,000 from using traditional medicine.

The data on the value of tourism services from pastoralism could not be available as no meaningful involvement of pastoralist in tourism was in practice. While pastoralists could play a role in the tourism industry as tourist attraction, conservers of wildlife and forests, this has not been given a priority in research and policy. Instead, pastoralists have always been blamed for destruction of natural resources, despite many research findings, which show that they could play an important part in the natural resource management. Some efforts by Masai people at Matebete village, where cultural tourism was tried was reports. The Masai have preserved some tourist attractions including traditional Maasai houses, forest reserves and waters sources. They also offer other cultural tourist attractions such as traditional dancing and songs, traditional commodities such as *shanga*, spears, traditional medicine and decorative items.

Regarding the role of pastoralism in supply chain linkage and value addition, the available information shows that the participants in the meat supply chain earn approximately 1.4 billion per annum distributed as 163 million to middlemen, 351 million to butcher owners, and 847million to *nyama choma* businesses. The meat supply chain also supports approximately 200 people with a full-time job which would earn them approximately 60 million per annum.

**In general, the review of past studies on pastoralism in Tanzania and the survey carried out in the Usangu Basin have shown that livestock in the pastoral systems have a wider contribution to the livelihoods and has sustained the livelihoods of the pastoral communities for many decades. However, there is limited investment in the pastoral economy by both the government and the private sector. As a result the system has been left to on seasonal availability of forage and water thus resulting into uncontrolled mobility. Though the system has sustained the livelihood of the pastoral communities for many decades, it is constrained by poor animal husbandry practices, lack of modernization, accumulation of stock beyond the carrying capacity and lack of market orientation. The government's view over pastoralism has been that pastoralism poorly contributes to the national economy in terms of livestock exports, that pastoralism is heavily limited by**

**disease management deficiencies and that pastoralist range management is obsolete, unproductive and environmentally degrading.**

This view is based on official statistics which tell only part of the actual contribution of the livestock in general and pastoralism in particular, as they only cover commercial goods and services for the sector. Important contribution of pastoral systems that is always taken for granted is the foreign exchange savings from not importing meat, subsistence production, inputs to agriculture, supplementary products, tourism services and supply chain linkage. The general lack of Local participation of pastoralists in the economic evaluation of their production system constitutes a weakness of the current evaluation of the system and can be one of the source of misconceptions and lack of understanding of the system. The pastoralists have over time gained indigenous knowledge and insight of their system and thus lack of their participation leaves a lot to be desired regarding the judgement usually made by policy makers, politicians and environmental activists. An interactive evaluation involving the key stakeholders, the planners and policy makers on one hand, and the stakeholders including pastoralists on the other, is important in designing appropriate resource management strategies for the betterment of all.

## 3.4 4.2 RECOMMENDATIONS

Based on the study findings and conclusion following are recommended:

(I) The study has shown that the existing official statistics on the value of pastoralism to the Tanzanian economy do not give the full picture of the value of pastoralism because only products which enter the market are reported. Due to this under-valuation, pastoralim has been receiving little attention from the government in its development agenda. In order to enable policy makers to make informed decisions in formulating its development agenda for livestock production systems, the significance of pastoralism in terms of its wider contribution to household livelihoods and the economy as a whole should be fully reported in official statistics. This requires those preparing the official statistics to also account for the indirect use values of pastoralim such as subsistence production, inputs to agriculture, supplementary products, tourism services and supply chain linkages.

Locally based participatory approaches should be used in the economic evaluation of pastoralism and the results of the evaluation be incorporated in the national statistics. This process will enable the planners and policy makers on one hand and the

stakeholders including pastoralists on the other to interact and design appropriate resource management strategies for the betterment of all.

(ii) Although people that derive their livelihood from pastoralism are clients of policy makers like other citizens who depend on other sources of livelihood like commercial farming, the wider contribution of pastoralism to household livelihoods and the Tanzanian economy is not well understood by these policy makers who are supposed to serve them by creating an enabling environment. A client oriented approach to provision of an enabling environment as envisaged in the National Livestock Policy requires a greater understanding of pastoralism and the priorities of the system on which to base policy, programs and plans for development. Unless the priorities are recognized and factored into livestock development programs, then the livestock sector contribution to poverty reduction will not be realized.

(iii) A pro-poor approach to livestock development would seek to understand and appreciate the values contributed by the various livestock production systems and seek to support them so that they contribute more rather than attempting to frustrate or change them abruptly. Pastoralism which has been found in this study to have wider contribution to livelihoods should be supported by policy makers so that they develop and contribute more effectively to peoples' routes out of poverty.

The recent decision to evict pastoralists from the Usangu plains was not a pro-poor approach based on understanding the pastoral production system but a decision based on misconception of the system with political motives and individualistic economic interests. This can only afford to impoverish the already poor people rather than helping them to get out of poverty.

(iv) Although pastoralism has been found to have a wider contribution to livelihoods and has sustained livelihoods of pastoral communities for many decades, there has been limited investment in pastoral areas. Instead of blaming pastoralism range management as being obsolete, unproductive and environmentally degrading, efforts should be made to improved rangelands and water supply in the pastoral areas. The new National Livestock Policy recognises the need to improve the rangelands and water supply but strategies and action plans are yet to be developed. Deliberate efforts should be made

to involve the pastoralists and their organizations in the process of developing the strategies and plans for action.

(iv) Although tourism as an indirect value of pastoralism offers many economic opportunities, the findings of the survey in the Usangu Basin indicate that pastoral community does not realize that it is an opportunity that can be exploited to improve their livelihoods. There is need to empower the pastoral communities so that they increasingly engage in tourism in their areas. This will not only improve the contribution of pastoralim to the livelihoods of the pastoral communities but also its contribution to the livestock sector and the economy as a whole.

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# 4 APPENDIX 1

| Year | Cattle | Goat | Sheep | Donkey |
|---|---|---|---|---|
| 1926/1927 | 66 865 | | | |
| 1938 | 44 924 | | | |
| 1948 | 187 244 | 31 828 | 24 107 | 351 |
| 1953 | 226 269 | 38 785 | 27 555 | 856 |
| 1976 | 541 645 | 16 047 | 23 826 | 1 346 |
| 1984 | 437 821 | 34 204 | 39 178 | 2 443 |
| 1987 | 457 759 | | | |
| 1997/1998 | 548 291 | 42 616 | 43 783 | 2 393 |
| 2000 | 300 963 | 94 597 | | 3 202 |
| % change 1948-1998 | 293 | 134 | 163 | 682 |

**Appendix 2: Distribution of livestock in Mbarali by division**

| Ward | (1994/95 census) | | | 2007 statistics | | |
|---|---|---|---|---|---|---|
| | Cattle | Goats | Sheep | Cattle | Goats | Sheep |
| **Ilongo division:** | **207,787** | **32,103** | **22,316** | **60,337** | **13,314** | **3,190** |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ruwia/Mahongole | 31,198 | 3,611 | 2,317 | 9,610 | 2682 | 1654 |
| UT/Usangu/Igurusi | 89,432 | 3,897 | 1,749 | 34,236 | 8662 | 1191 |
| Chimala | 19,017 | 6,135 | 4,210 | 16,491 | 1970 | 345 |
| Msangaji | 68,140 | 18,460 | 14,040 | 0 | 0 | 0 |
| **Rujewa Division:** | **239,407** | **20,708** | **26,706** | **85,444** | **29,147** | **20,407** |
| Rujewa/Ubaruku | 110,077 | 7,624 | 14,482 | 20,997 | 3245 | 3298 |
| Mawindi | 62,090 | 6,290 | 6,482 | 41,977 | 17263 | 7263 |
| Mapogoro | 18,598 | 482 | 601 | 11,710 | 3266 | 2583 |
| Madibira | 48,642 | 6,312 | 5,141 | 10,760 | 5373 | 7263 |
| **Total** | **447,194** | **52,811** | **49,022** | **145,781** | **42,461** | **23,597** |

**5**