AN ANALYSIS OF THE PRODUCTION AND MARKETING PRACTICES OF THE WOOL INDUSTRY IN LESOTHO

by ANDRIES JOHANNES JORDAAN

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ANDRIES JOHANNES JORDAAN

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Degree: M.Sc. Agric.
Department: Agricultural Economics
Supervisor: Prof. H.D. van Schalkwyk

ABSTRACT

Lesotho is a small country with, apart from abundant water, very few significant natural resources. The countries' economy is mainly based on limited agriculture and manufacturing. Most of the labour force depends on subsistence agriculture, yet this sector only contributes 15% to the Gross Domestic Product (GDP). Wool is one of Lesotho's largest export commodities and (together with mohair) is the only agricultural earner of foreign capital. The continuous decline in national wool production during the past three decades, coupled with a drastic deterioration in the quality of the rangelands, has become a serious predicament for the Lesotho government. The competitiveness of the wool industry in Lesotho is in question, and wool farmers remain poor despite the export earnings of wool. The Lesotho government is also under pressure to privatise the shearing shed system, and it is seeking alternative solutions to substitute or increase the efficiency of the present system. These factors and remedial actions to increase competitiveness have necessitated an analysis of the wool production system.

This study forms part of a larger study focussing on the wool and mohair industries in Lesotho. The main objective of the study is to analyse the wool system in Lesotho, including the production, trade, and marketing processes of the industry and to recommend the necessary remedial actions.

The problem conceptualisation method was used to analyse the research problem. Both deductive logic and inductive reasoning were used to analyse the data and to form conclusions. The study relies heavily on a comprehensive literature study for the gathering of secondary data. The Rapid Rural Appraisal (RRA) technique was used to obtain the necessary primary data, and the basic principles of action research were applied during the research.

The study highlighted the lack of proper feeding, low reproduction rates, high mortality, and stock losses as the major reasons for low yields. Emphasis is placed on the importance to improve the quality of rangelands and to introduce efficient production systems. Also highlighted in the study is the crucial role of the shearing shed system and the need to privatise the shearing sheds through the establishment of producer-owned cooperatives. Computerisation and streamlining of the administration process during marketing should coincide with the privatisation process. The development of micro-cooperatives at the shearing sheds can also serve as a structure to bring services such as the availability of inputs closer to the producer. The development of a rural banking system supported by micro-cooperatives as a basis should also be exploited. The present trade and marketing system through the South African marketing structures should be treasured. The system of licensed traders, though, should be liberalised because of its monopolistic nature and the lack of law enforcement and proper policing of the system.

An empirical estimation by means of a policy analysis matrix indicates that the wool system in Lesotho is not competitive and efficient at all. It shows that the economy is losing foreign exchange from local production because the opportunity cost of its domestic resources is more than the foreign exchange it gains. This is in total contrast to what the industry and government believe since they regard wool production as the flagship of all the agricultural systems in the country. The study, however, shows that an increase of 15% in wool production output is sufficient enough to ensure competitiveness. The study therefore concluded that the wool system, as a vital supplier of income at household level in the rural areas, should increase productivity at the production level to increase its competitiveness.

ONTLEDING VAN DIE PRODUKSIE EN BEMARKINGSTELSEL VAN DIE WOLBEDRYF IN LESOTHO.

deur **ANDRIES JOHANNES JORDAAN**

Graad: **M.Sc. Agric.**
Department: **Landbou-Ekonomie**
Promotor: **Prof. H.D. van Schalkwyk**

UITTREKSEL

Lesotho is 'n klein, arm en ontwikkelende land met weing natuurlike hulpbronne. Behalwe vir die verdienste uit water wat aan Suid-Afrika verkoop word berus Lesotho se ekonomie hoofsaaklik op beperkte landbou- en vervaardigingsbedrywe. Die meerderheid mense in Lesotho is afhanklik van landbou alhoewel die Bruto Binnelandse Produk (BBP) vanuit die landbousektor slegs 15% is. Wol is een van Lesotho se belangrikste uitvoerprodukte en (saam met sybokhaar) die enigste landbouproduk wat buitelandse kapitaal verdien. Die volgehoue verlaging in wolproduksie, die agteruitgang van die natuurlike weiding en die verarming van wolboere gedurende die laaste drie dekades is egter 'n groot bron van kommer vir die Lesotho regering.

Hierdie studie is deel van 'n groter studie wat die wol en sybokhaarbedrywe in Lesotho moes evalueer. Die hoofdoel van hierdie studie is om die produksie en bemarkingsaspekte van die wolbedryf in Lesotho te ontleed en om regstellings aan te bevel.

Die probleemkonseptualiseringsmetode is gebruik om probleme te identifiseer en te groepeer. 'n Deeglike literatuurstudie vorm die basis van die meeste sekondêre data terwyl primêre data deur middel van vraelyste, persoonlike onderhoude, rekords en beskikbare statistieke ingesamel is. Die beginsels van aksie-navorsing is toegepas en die data is aangevul

en geverifieer tydens twee werkswinkels wat deur verteenwoordigers in die wolbedryf bygewoon is

Die swak produksievlakke van wol is in die studie uitgewys en die geidentifiseerde oorsake daarvan is geleë in swak voeding, lae reproduksie, hoë mortaliteite en veeverliese. Kwaliteitsprobleme soos die teenwoordigheid van pigment in die wol is ook ontbloot. Die studie toon egter aan dat die meeste van die probleme met goeie produksiepraktyke aangespreek kan word. Die regeringsbeheerde wolskuurstelsel vorm die kern van die wolbedryf in Lesotho en dit word aanbeveel dat die regering die stelsel moet privatiseer deur eienaarskap aan produsente-koöperasies oor te dra. Privatisering moet ook saamval met die rekenarisering en verbetering van die administratiewe prosesse om wolboere tydig vir hul skeersels te vergoed. Die daarstel van 'n mikro-kooperatiewe stelsel kan insette nader aan die produsente bring en finansiële dienste meer toegangklik vir wolboere maak. Die skeerskuurstelsel bemark wol deur die Suid-Afrikaanse veilingstelsel en verkry daardeur die maksimum voordeel van internasionale pryse. Die studie toon aan dat dit huidiglik die mees voordelige stelsel vir Lesotho produsente is en dat die alternatiewe stelsel van gelisensieerde wolhandelaars geliberaliseer moet word deur die beperkings van lisensies op te hef.

Die empiriese analise van die wolbedryf met behulp van die Beleidsanalise Matriks toon aan dat die wolbedryf in Lesotho geensins mededingend en effektief is nie. Die ontledings ontbloot die feit dat die ekonomie in werklikheid buitelandse kapitaal verloor omdat die binnelandse geleentheidskoste om wol te produseer meer is as die buitelandse kapitaal wat deur uitvoere verdien word. Normaalweg behoort beleidmakers so 'n sisteem nie te ondersteun nie maar die studie toon ook aan dat 'n verhoging in produksie van so min as 15% voldoende is om die bedryf mededingend te maak. Die beleidsfokus vir die Lesotho regering moet dus op die produksievlak gerig word aangesien drastiese verbetering in die mededingendheid van die wolbedryf bewerkstellig kan word deur produksie te verbeter.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The agricultural sector in Lesotho has received considerable attention over time mainly because the majority of the population depends on agriculture as a basic source of income. Developing Lesotho's agriculture is one of the most challenging requirements to alleviate poverty in the country. It has been suggested that two thirds of the income generated from agriculture accrue to the poor (World Bank, 1995). Job opportunities for Lesotho residents have diminished, particularly in South Africa, and living conditions in rural areas have worsened, thereby increasing dependence on agriculture. This dependence probably exerts pressure on the natural resources of the country.

The livelihood of the Basuto is based on a group of subsistence strategies. The World Bank (2001) identifies five main livelihood themes: horticulture and livestock, government and its activities, wage employment and education, the informal sector, and security outcomes. Agriculture is the largest single employer in Lesotho, with nearly 90% of the rural household heads indicating that they practised farming in 1999 (World Bank, 2001). Of the agricultural households, 67% had only fields, 25% had only livestock and the rest had both fields and livestock. Crops are usually fully consumed, while livestock production usually provides cash income for households. Sheep and goats generate 75% of the gross cash income generated by all livestock (Lowry, 1986).

Lesotho's wool industry dates back from the early 1900's. For many decades, the wool industry (together with mohair) has been the only earner of foreign capital in the agricultural sector (Bureau of Statistics, 2001). For many farmers in Lesotho, wool is also the only source of cash income (Tsoanamatsie, 2003; Moteane, 2003). The deterioration of the rangelands in

Lesotho obliged the government and land users (including wool farmers) to analyse the different agricultural systems for competitiveness, efficiency and sustainability.

The Lesotho government and other role players acknowledge the importance of the wool industry in Lesotho and the Department of Trade and Industry was sanctioned to execute an investigation into the wool and mohair industry in the country. This study forms part of that larger study that focused on the wool and mohair industries in Lesotho. The main objective of the larger study was to analyse the trade and marketing systems of the wool and mohair industries, while simultaneously also considering the production challenges of wool and mohair in Lesotho.

1.2 PROBLEM STATEMENT

For many years, wool production has been regarded the largest single livestock activity in Lesotho where the majority of the population depends on agriculture. Since 2000 the average annual growth in the agricultural sector has declined to -1.9% and -1.6% respectively for the years 2000 and 2001 (World Bank, 2001). The government of Lesotho is concerned about the continuous decline in the national wool production which occurred over the past three decades coupled with a drastic deterioration in the quality of the rangelands (Tsoanamatsie, 2003). These factors necessitated an analysis of the wool production system.

The competitiveness of the wool industry is under suspicion, although it is still one of the major sources of foreign exchange (Bureau of Statistics, 2001). Wool farmers in Lesotho in general stay poor and are not able to expand their production (Livestock Production and Marketing Section, 2003). The Lesotho government is also under pressure to privatize the shearing shed system compelling them to seek alternative solutions to substitute the present system (Tsoanamatsie, 2003). One of the major issues is how government can use policy to improve the competitiveness of the wool industry. An analysis of the total wool sector (production as well as marketing) is needed to identify the real problems and to propose remedial actions to improve the industry's competitiveness.

1.3 RESEARCH OBJECTIVE

The main purpose of this study is to analyse the competitiveness and efficiency of the wool industry in Lesotho and to propose strategies to improve competitiveness and efficiency. In order to reach this objective the following sub-objectives have to be addressed:

- The identification and determination of core problems inhibiting competitiveness and future prospects of increasing wool production in Lesotho.
- Evaluation of existing marketing structures by investigating:
  - The performance of the current marketing system;
  - existing wool institutional marketing arrangements; and
  - the impact of current marketing arrangements in South Africa on Lesotho's wool industry.
- Evaluation of the impact of government policies, imperfect markets or externalities on the wool commodity system through:
  - A review of policies governing the production and marketing of wool in Lesotho; and
  - An evaluation of the impact of policy, imperfects markets and externalities.
- Identification of possible remedial actions that can be applied to ensure sustainability and competitiveness within the wool production system.
- Identify actions that can be applied to increase the efficiency of the wool trade and marketing system and to improve and/or substitute the government controlled shearing shed system.

1.4 RESEARCH METHODOLOGY

The techniques used to obtain and analyze data in this study are analytical, theoretical, descriptive and based on economic principles. The problem conceptualization method is used to analyse the research problem. Both deductive logic and inductive reasoning are used to analyse the data and to come to conclusions. The study profoundly relies on a comprehensive literature study for the gathering of secondary data. The Rapid Rural Appraisal (RRA) technique was used to obtain the necessary primary data at the hand of a structured

questionnaire (Appendix A) and the basic principles of action research were applied during the research.

The problem conceptualization tool is used to identify and investigate problems relating to marketing and production in the wool industry. This tool facilitates analysis of existing situations by identifying major problems and their main causal relationships. The output is a graphical arrangement of problems differentiated according to *causes* and *effects*, joined by a core, or focal, problem. This technique assists understanding of the complexity and multidisciplinary context of a specific project problem (Safavian and Landgrebe, 2003). The interrelationship of problems and how they should be addressed are the ultimate challenges of this study. By using this technique, problem-solving can be done in a structured manner.

The RRA consists of a series of techniques for research that supposedly generate results of less apparent precision, but greater evidential value, than classic quantitative survey techniques. The method does not need to be exclusively rural nor rapid, but it is an economic way of obtaining evidential data, especially in an agricultural environment (IISD, 1999; Leedy, 2003). It is essentially extractive as a process. RRA (and analogues) emerged in the 1970s as a more efficient and cost-effective way of learning by researchers and outsiders, than was possible by large-scale social surveys or brief rural visits. RRA emphasizes the importance and relevance of situational local knowledge, and instead of achieving spurious statistical accuracy, it rather focuses on the importance of gaining the correct general information. A style of "*listening research*" is entrenched in the method with a creative combination of iterative methods and verification, including triangulation of data from different sources (using two different methods to view the same information) (IISD, 1999). The RRA drew on many of the insights of field social anthropology of the 1930s-1950s. The RRA is usually conducted by a multi-disciplinary team, and the main techniques used in this study include the following:

- Direct observation, familiarization and participation in activities;
- interviews with key informants, group interviews and workshops;
- mapping and diagramming;
- biographies, local histories and literature studies;

- ranking and scoring of data obtained through a short and simple questionnaire; and
- rapid report writing.

The data obtained during the RRA, literature study and interviews were supplemented by inputs obtained during two workshops. The action-research methodology was used to refine the research. O'Brien (1998) defines action-research as research that *"aims to contribute both to the practical concerns of people in an immediate problematic situation and to further the goals of social science simultaneously. Thus, there is a dual commitment in action research to study a system and concurrently to collaborate with members of the system in changing it in what is together regarded as a desirable direction. Accomplishing this twin goal requires the active collaboration of researcher and client, and thus it stresses the importance of co-learning as a primary aspect of the research process."*

A schematic description of the research procedures followed during this study is shown in Figure 1.1

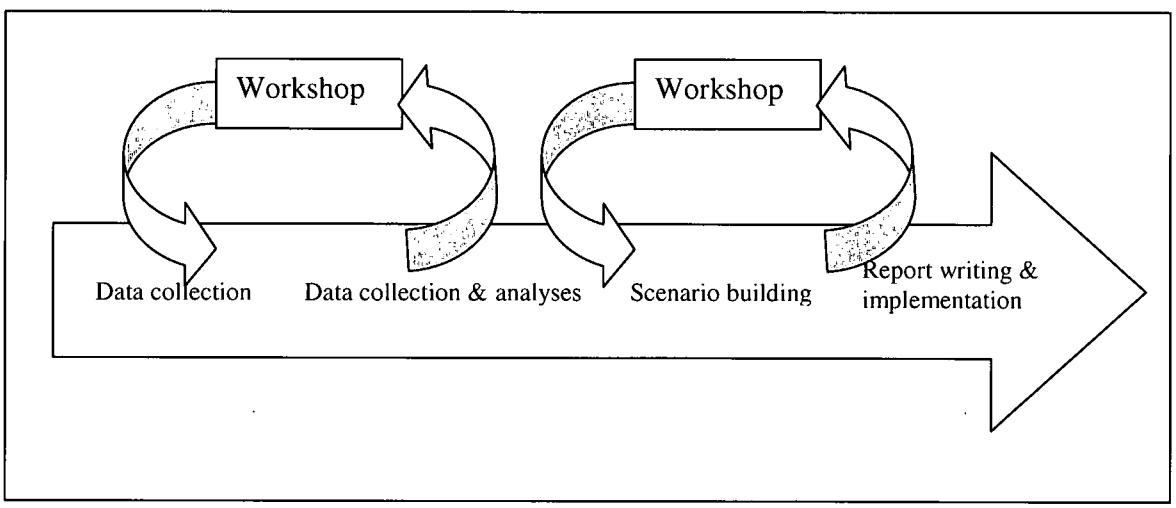

Figure 1.1: Action-Research Methodology

The Policy Analysis Matrix (PAM) is used to analyse the efficiency and competitiveness of the wool industry in this study. The economic impact of government policies and imperfect markets on the wool industry is also analysed and described with the assistance of the PAM. Farm level enterprise budgets are used to calculate and determine private and social

profitability (competitiveness and efficiency). The efficiency of the marketing system is also calculated. PAMs are constructed for the production activity, as well as the marketing activity, with a combined PAM for the wool system as a whole. The shearing shed system and the non-shearing shed system (farmers who trade directly with traders) are also compared with each other by means of the PAM methodology. The different policy analysis ratios are calculated and discussed for each of the wool systems in Lesotho.

As a conclusion to the study, different scenarios were hypothesized in order to address different marketing and trade issues. Scenarios are powerful planning tools precisely because the future is unpredictable. Unlike traditional forecasting or market research, scenarios present alternative images, instead of extrapolating current trends from the present. Scenarios also embrace qualitative perspectives and the potential for sharp discontinuities, which are excluded by econometric models (Geyer and Scapolo, 2003). Consequently, creating scenarios requires decision-makers to question their broadest assumptions about the way trade and the marketing of wool should be managed, so that they can foresee decisions that might be missed or denied.

1.5 DATA USED

Primary data and information regarding the nature of rural marketing systems, as well as problems inhibiting the performance of the wool industry, etc. were obtained by conducting interviews with government officials, representatives from the private sector, and individuals involved in the industry, as well as conducting an RRA in the Mokhotlong, Mohale's Hoek, Leribe and Maseru areas.

The stratified random sampling method was used to identify RRA participants and respondents. It became clear during the study that two distinctive groups of farmers are involved in the wool industry. The largest group makes use of shearing sheds, and the smaller group consists of farmers selling their produce to traders and smugglers. During the first round of interviews, only 86 farmers were interviewed, all of whom were from the first group of farmers. A second round of interviews targeting non-shearing shed farmers was also conducted. A total of 24 questionnaires from this group could be used. Both groups of farmers were randomly selected from the main production regions in Lesotho. Although the

sample sizes were very small in relation to the total population, the information obtained from the questionnaires was consistent with available literature and the experience of other informed role-players. The information obtained in the questionnaires were also discussed and supplemented with information obtained during two separate workshops. More than 100 people attended and contributed toward this study during those workshops. Attendees were representative of producers, government, traders and private sector.

Additional primary data were obtained by conducting personal interviews with the following groups and/or individuals:

- Extension officers;
- field personnel at the Department of Field Services;
- personnel at the Livestock Products Marketing Structure (LPMS);
- licensed traders;
- unlicensed traders or *smugglers* inside Lesotho and South Africa;
- South African farmers selling breeding material to Lesotho farmers;
- South African farmers assisting Lesotho farmers with advice and grazing;
- wool brokers handling the sale of the Lesotho clip, specifically BKB and CMW;
- leaders from the Lesotho Wool and Mohair Growers' Association;
- leaders from the Merino Breeders' Association in South Africa;
- leaders from the National Wool Growers' Association (NWGA) in South Africa; and
- personnel at two border posts between Lesotho and South Africa.

1.6 CHAPTER OUTLINE

The next chapter focuses on the problems faced by developing countries in Africa. Competitiveness and the sustainability of agriculture in developing countries and factors required for economic and agricultural development are reviewed. Production challenges faced by small-scale farmers on communal land in other areas are identified and discussed. The importance of livestock and its support structures in developing countries are also addressed in this chapter.

Chapter 3 provides the reader with an overview of Lesotho and in particular, insight into the wool industry of the country.

The production of wool in Lesotho receives detailed attention in **Chapter 4**.

Chapter 5 deals with the trade and marketing systems of wool in Lesotho.

The competitiveness of the wool system and the impact of government policy, imperfect markets and externalities on it are calculated and discussed in **Chapter 6.**

Chapter 7 provides a summary of the proposals and recommendations to improve the competitiveness and efficiency of the wool system in Lesotho. Both production and marketing challenges are addressed. The chapter ends with some suggestions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

"This is why, with a view to give back hope to this crushed people, I intend to imprint on the territory a new vision, a new role which permits it to be the backbone of development. This role is to constantly listen to the people to understand their worries and to be responsible for their well-being". These are the words of President Laurent-Desire Kabila at his opening address on February 12, 1998, at the territorial conference in Kinshasa aimed at reinforcing national reconstruction efforts in the DRC. Unfortunately, it only remained words for many years. If Africa could only convert these words into deeds! Inappropriate social and economic policies, natural disasters, and civil strife have all contributed to the deteriorating conditions in sub-Saharan Africa today. A staggering one-third of the population is undernourished. Childhood mortality rates are among the highest in the developing world. Eighty percent of all Africans live on a daily income of less than US$2; nearly half struggle to survive on US$1 a day or less (Hazell and Johnson, 2002). Roth (2003) mentioned that images of African economic development often depict a troubled continent: a region afflicted by periodic famine and persistent poverty; populations on the move, civil wars and strife; rural economic decline and economic stagnation as a result of poor planning, bad economic policies and corruption.

Why is it then that Africa as a continent and countries such as Lesotho are labeled as underdeveloped and poverty-stricken if taken into account that Africa is richly endowed with human, natural, agricultural and mineral resources (Ramsamy, 2002). Few Africans are aware of the fact that there is no other continent blessed with the resources Africa is blessed with. According to Enwegbara (2001) and the World Bank (2002), Africa has 770 million people - one of the biggest and most attractive markets in the world. Africa is blessed with 40 percent of the world's potential hydroelectric power supply. The bulk of the world's diamond

supply is in Africa. Africa owns over 90 percent of the world's cobalt, 70 percent of its cocoa, 64 percent of its manganese, 60 percent of its coffee, 50 percent of its palm oil, 50 percent of the world's phosphates, 50 percent of its gold production, 40 percent of its platinum, 30 percent of its uranium, and 20 percent of the total petroleum traded in the world market. The agricultural resources (soil, vegetation, climate) in Africa are diverse and in abundance and comparable to the best in the world.

Ramsamy (2001) stressed that the potential exists for Africa to become a vibrant economic and political bloc and therefore a key player in the world economic arena. Hazell and Johnson (2002) had the following to say: *"In contrast to popular predictions of Africa's worsening economic decline, recent research supports an alternative and more positive vision of Africa's future. New political commitment and African ownership of the development agenda, combined with a renewed focus on and investments in smallholder-led agriculture, have the potential to halt or reverse the current downward spiral of hunger, poverty, environmental degradation, disease, and civil strife*". Africa is building on lessons learned from past policy and implementation mistakes to address key pillars of growth to revitalize the agriculture sector. Africa experiences a deepening and acceleration of its integration agenda. Africa is increasingly enhancing its capacity and position to minimize the risks of globalization and to take advantage of the opportunities it presents in order to effectively deal with the pervasive problems of extreme and overall poverty (Hazell and Johnson, 2002).

The physical, cultural and socio-economic environment in Africa has changed dramatically during the past three decades. Population densities and population growth rates have increased; input and credit markets have changed; tree cover, soil quality and arable land per capita have declined and the relative importance of non-farming income has increased (Kelly, Hopkins, Reardon, and Crawford, 1995). Africans and African governments can turn the tide by applying proper development policies, ensuring a sound government and nurturing a culture of productivity and a shared vision of peace and prosperity for Africa and its people (Mbeki, 2002). The main causes of the deterioration of the environment and natural resources are social and institutional in nature (Pookpakdi, 1992). It is therefore within the power of Africans (African governments) to stop the degeneration of Africa.

The trend of degeneration has been turned around in countries where governments actively support new investments in agriculture and rural development. In Uganda, for example, where political leaders embraced new agricultural programs in the 1990s, they were able to reduce rural poverty from 50 to 35 percent (World Bank, 2002). In the past, development practitioners erroneously believed that small farmers were unwilling to change their traditional farming practices, but many studies now prove that small farmers respond to meaningful incentives (Hazell and Johnson, 2002).

The agricultural sector is at the heart of the economies of the least developed countries (LDCs). It accounts for a large share of gross domestic product (GDP) (ranging from 30 to 60 percent in about two thirds of them), employs a large proportion of the labour force (from 40 percent to as much as 90 percent in most cases), represents a major source of foreign exchange (from 25 percent to as much as 95 percent in three quarters of the countries), supplies the bulk of basic food and provides subsistence and other income to more than half of the LDCs' population (World Bank, 2002). The strong forward and backward linkages within the rural sector and with other sectors of the economy provide added stimulus for growth and income generation (Norton and Alwang, 1993).

Thus, significant progress in promoting economic growth, reducing poverty and enhancing food security cannot be achieved in most of these countries without the full development of the human potential and productive capacity of the agricultural sector and enhancing its contribution to overall economic and social development. A strong and vibrant food and agricultural system thus forms a primary pillar in the strategy of overall economic growth and development (Norton and Alwang, 1993). Agriculture in LDCs cannot continue to be treated as a residual sector for policy attention and investments (World Bank, 2002).

The debate regarding rural development has been losing momentum over the past decade, but sustainable development ensures that developers have to re-investigate rural development. Andres Yujevic (2003) proposes that Human and Agro-ecological Rural Development (HARD) could be successful focus areas designed to meet the challenges of peasant economies. This approach offers a new look at the opportunities and limitations entailed in the political economy in the peasant world. It also addresses the connection with other

economic agents that act as agricultural markets. The HARD approach assumes that the relationship between man and nature is complex; especially within an increasingly globalised economy. The HARD approach focuses more on an effort to enrich those processes of human and social growth which can improve the world in which we live. The HARD approach also seeks to understand the complexity of peasant realities, but also encourages a gradual process of change, adopting a style in which caution and sensitivity arise from an authentic disposition to learn (Yujevic, 2003).

The rest of this chapter deals with specific challenges faced by developing countries such as Lesotho. Sustainability and competitiveness of the agricultural sector in developing countries are discussed at the hand of an intensive literature study. The importance and relevance of some of the most important "growth factors" are discussed.

2.2 COMPETITIVENESS AND SUSTAINABILITY OF AGRICULTURE IN DEVELOPING COUNTRIES

Developing countries today are more than ever interested in assessing their status and actively address economic growth. Competitiveness has been defined as *"the ability of a nation to meet the test of free international markets while expanding real income at home"* (Nye, 1990). Michael Porter (1990) and Fairbanks and Lindsay (1997) stress that sustained growth in productivity represents the ultimate definition and measure of competitiveness. Krugman (1993) on the other hand believes that the concept of country competitiveness would encourage policy-makers in the use of incentives, subsidies and protectionist measures, and therefore dismisses the notion of country competitiveness. He argues that it is misleading and even dangerously mercantilistic, noting that firms, and not countries, compete. The existence today of two widely followed country competitiveness rankings means that the notion of country competitiveness is here to stay and is a useful tool in furthering private sector development (National Competitiveness Council, 1998; Garelli, 1999). While countries do not compete, they do provide national platforms upon which producers, firms and industry compete (Murphy, 2003). In the context of this study, competitiveness focuses on the sustained increase in the productivity of the wool industry in Lesotho.

The other very important economic concept is comparative advantage. This tool assist policy-makers in determining which specific part of the agricultural sector has the best advantage in relation to international competitors and may therefore accrue the most benefit from investment and support (Salinger, 2003). David Ricardo (1978) already presented the law of comparative advantage during 1817 in the publication *"Principles of Political Economy and Taxation"*. This is one of the most important and still unchallenged laws of economics.

Following the trade policy analysis tradition of Corden (1971, 1974), comparative advantage can be defined as an activity's marginal contribution to national income or social profits, while competitiveness is its marginal contribution to the net income (private profits) of its owner or manager. The comparative advantage of a country or region therefore determines how a new project or policy change will affect the whole economy. It is a useful tool to analyze new projects and policy interventions in terms of their impact on average real incomes and economic growth (Masters, 1995).

The highest possible level of real income and economic growth is achieved when competitiveness and comparative advantage are equalized, so that the most socially valuable activities attract the most resources (Masters, 1995). An opportunity for new policies, projects and programs arises within countries and globally, because of substantial differences between comparative advantage and competitiveness. The policy implications of competitiveness and comparative advantage in terms of profitability are that national income will rise with the expansion of socially profitability activities, while expanding privately profitable ones may not have the same result.

The Food and Agricultural Organization (1996) defined sustainable development as: *"The management and conservation of the resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development conserves land, water, plants and animal genetic resources, and is environmentally not degrading, technically appropriate, economically viable and socially acceptable"*. Oettle, Fakir, Wentzel, Giddings and Whiteside (1998) describe sustainable agriculture as *"agriculture*

which meets today's livelihood needs without preventing the needs of neighbours or future generations from being met". This definition implies a combination of dimensions, namely:

- The ecological dimension - the productive capacity of the natural resources on which agriculture depends must to be conserved even if it is changed (e.g. from bush to fields).
- The economic dimension - the farming system needs to remain financially viable, both for the farming household and the wider community.
- The social dimension - both in terms of equity and in meeting the aspirations and the cultural traditions of communities.

Agricultural production in developing countries is more complex than the purely technical basis of agriculture in many developed countries. Social, cultural, political and economic dimensions characterize the agricultural sector in developing countries (Rosset, 2002). The concept of sustainable agriculture is a relatively recent response to the decline in the quality of the natural resource or productive base associated with modern agriculture (Altieri, 1995). Sustainability has, however, been controversial and diffuse because of conflicting agendas, definitions and interpretations of its meaning (Allen and Van Dusen, 1990; Lélé, 1991; Allen, 1993). Current tendencies in the agro-ecology encourage us to tap into the knowledge and skills of farmers and local communities, and to identify the potential for assembling biodiversity to create beneficial synergisms that provide the ability to remain at, or return to a relatively stable state (Rosset, 2002).

Altieri (1995) noted that the knowledge system of an ethnic group that has originated locally and naturally (called ethno-science) has revealed that local people's knowledge about the environment, vegetation, animals, and soils is quite detailed. In contrast to the sometimes patronizing plans from agriculturalists and consultants, peasant knowledge about ecosystems usually results in multidimensional, productive land-use strategies, which generate, within certain ecological and technical limits, the food self-sufficiency of communities in particular regions (Altieri, 1995). Traditional agriculture has certain ecological features that one should understand. These include *inter alia* the inherent ability to bear risk, production efficiencies of symbiotic crop mixtures, exploitation of a full range of micro-environments, recycling of

materials, reliance on local resources, etc. Important data and information relevant for the development of appropriate agricultural strategies are available in most local communities. These development strategies should be tailored to the needs, preferences and resource base of specific farmer groups and regional agro-ecosystems (Rosset, 2002).

2.3 STRATEGIES NEEDED TO DEVELOP THE AGRICULTURAL SECTOR AND IMPROVE COMPETITIVENESS OF AGRICULTURAL SYSTEMS IN DEVELOPING COUNTRIES.

Classical economists such as Adam Smith, John Stuart Mill, Thomas Robert Maltus and David Ricardo developed a theory of economic growth that relied heavily on factors such as population growth, natural resources and capital accumulation (Norton and Alwang, 1993). This theory, already developed in the late eighteenth and early nineteenth centuries, means in its simplest form that there are two types of people: workers, whose only asset is labour and capitalists who own land and capital. They argue that the interrelationship between labour and production based on the assets owned by the capitalists stimulates growth (Reynolds and Lloyd, 1975; Norton and Alwang, 1993). Frederick List, a German economic historian, developed a set of development stages based on occupational distribution (Norton and Alwang, 1993). One of the "fathers" of communism, Karl Marx, describes five stages of development based on changes in technology, property rights and ideology (Hayami, Yujiro and Ruttan, 1985; Norton and Alwang, 1993). The Harrod-Domar model developed by Harrod and Domar during the 1950s identified capital accumulation as an important source of economic growth. They stressed that the rate of growth of national income is positively related to the national savings rate of a country and negatively related to the country's capital/output ratio. The so-called dual-economy development theory is based on the transfer of labour, capital and technology between different economies (agriculture to industry, developed to/from under-developed, etc) (Norton and Alwang, 1993).

All of the above-mentioned theories have some shortcomings, but emphasize in one way or another the basic sources of growth, *i.e.* labour, natural resources, capital, increase in scale and specialization, improved efficiency and technological progress (Norton and Alwang, 1993).

With the passage of time, several agricultural development theories have been proposed. These theories emphasize the importance of technical and institutional changes as key components of agricultural development strategies. The development of agricultural sectors may not follow the most economic efficient path because of the realities of human behaviour, collective action and transaction costs (Norton and Alwang, 1993). Rural developers and economists today agree that some of the most important factors needed for growth in under-developed and developing countries are the following:

- The revitalizing of the smallholder section;
- supply of infrastructure and rural services;
- unleashing of markets and trade opportunities;
- improvement of agricultural research and extension;
- strengthening of community- and producer-based organizations; and
- development of human capital and institutions.

In the next section these factors in the literature are explored and their impact on development in both under-developed and developing countries is discussed.

2.3.1 Revitalizing the Smallholder Section

Small farms or small farmers, mostly on communal or state-owned land, are distinct characteristics of agriculture in Africa (World Bank, 2003). In Lesotho the agricultural sector is also characterized by the role played by small farmers. Many opposing views exist among economists with regard to the profitability of small-scale farms. Small farms or farmers have time and again been labeled as backward, unproductive and inefficient—an obstacle to be overcome in the process of economic development. Mainstream economists in both capitalist and socialist countries have confidently and enthusiastically predicted the demise of the small family farm. Rosset (1999), however, challenges the conventional wisdom that small farmers are backward and unproductive by saying that these farmers are "multi-functional" - more productive, more efficient, and contribute more to economic development than large farmers. He also argues that small farmers make better stewards of natural resources, by conserving biodiversity and safeguarding the future sustainability of agricultural production.

But what is a small farm exactly? Are small farms simply farms with an area covering fewer hectares? Pontius (1986) defines small farms as farms that are limited with regards to the farmer's resources of land, labour or capital. These farms rely on labour provided by the household, and the individuals in the household are responsible for making farming decisions. Dent (1989) and Pookpadi (1992) argue that it is an obvious fact that small farms are based on the size of the farm holding. They define small farms as those farms smaller than the average farm size at a national or provincial level. However, farm size alone is not a good criterion for categorizing farmers. A one ha farm of irrigated land is generally much more prosperous than 10 ha in a drought-prone area without water.

The importance of small-scale farms/farmers was recognized by the United States Department of Agriculture's (USDA) National Commission on Small Farms in a landmark report in 1998 titled *"A Time to Act"*, in which the USDA refers to the *"public value of small farms/farmers"* (USDA, 1998). This report recognizes the importance of small farms, especially during the development phase of an economy (such as Lesotho) but also recognized that it can play an important role in developed economies such as the USA. The value of small farms/farmers is ascribed to the following characteristics:

- **Diversity**: Small farms are characterized by a diversity of ownership, of landscapes, of cropping systems, of biological organization, culture and traditions. A varied farm structure contributes to biodiversity, a diverse and esthetically pleasing rural landscape, and open space.
- **Environmental benefits:** Responsible management of the natural resources of soil, water, and wildlife, produces significant environmental benefits for society.
- **Empowerment and community responsibility**: Decentralized land ownership produce provides the following:
    - more equitable economic opportunity for people in rural areas,
    - greater social capital, and
    - a greater sense of personal responsibility and feeling of control over one's life.

- Landowners who rely on local businesses and services for their needs are more likely to have a stake in the well-being of the community and the well-being of its citizens.
- In turn, local landowners are more likely to be held accountable for any negative actions that could harm the community.

- **Places for families**: The skills of farming are passed from generation to generation under family ownership structures. Family farms can be nurturing places for children to grow up and acquire good values.
- **Personal connection to food**: Most consumers have little connection to agriculture and food production. As a consequence, they are not connected to nature, and lack an appreciation of farming as the cultivation of the earth for the production of food that sustains us. By means of farmers' markets, community supported agriculture, and the direct marketing strategies of small farmers, consumers are beginning to connect with the people growing their food, and with food itself as a product of a farmer's co-operation with nature.
- **Economic foundations**: In various states and regions of the U.S., small farms are vital to the economy.

The USDA Commission on Small Farms in their report concludes with a call to government to change the policies that have favoured large, corporate-style farms in the past. Pontius (1986) points out that small farmers are risk-takers and have shown a willingness to experiment with new technology. He also mentioned that small farmers are leading the way with direct marketing and that they are often the consumer's only means of contact with farmers by means of direct marketing methods such as roadside stands and farmers' markets. Netting (1993) emphasized that in an era of diminishing non-renewable resources, small farmers frequently produce with minimal recourse to expensive external inputs.

The family farm is central to the sustainability of agricultural production in traditional farming communities. On the small farm, labour-intensive practices such as manuring, limited tillage, ridging, terracing, composting organic matter, and recycling plant products into the productive process, enhance soil conservation and fertility. Work quality,

management, knowledge and relationships are intertwined and mutually reinforcing (Netting, 1993).

The Food and Agricultural Organization (FAO) emphasized the importance of the multiple functions of small farming units in the Third World as a prerequisite to achieve a sustainable agricultural sector. Rosset stated as follows (1999): *"To face the current challenges of agriculture, we need to address agriculture and land in a broader context by integrating multiple roles (economic, food production, nature and land management, employment, etc.). Sustainable agriculture and land use is not just a means to obtain more food and income, in socially acceptable ways, which do not degrade the environment. Rather, it has an all-encompassing impact on communities, environments, and consumers. We must reach a consensus and common understanding of sustainable land use as an opportunity to improve the quality of the environment, including its physical (increased soil fertility, better quality air and water), biological (healthier and more diverse animal, plant, and human populations), and social, economic and institutional (greater social equity, cohesion, peace/stability, well-being) components. Land is not just a resource to be exploited, but a crucial vehicle for the achievement of improved socio-economic, biological and physical environments. Concretely, by paying attention to the multiple functions of agriculture and land use, all economic, social and environmental functions of agriculture, at multiple levels, are recognized and included in decision-making in order to promote synergies between these functions and to reconcile different stakeholder objectives."*

Much evidence exists that equitable, small farmer-based rural economies can provide the basis for strong national economic development (Pookpakdi, 1992; Langevin and Rosset, 1999; Rosset, 1999). The small farmer section was instrumental in the early development of the agricultural sector in the USA (de Janvry, 1981). Together with this development in agriculture, "*yeoman*" farmers formed a vibrant domestic market for manufactured products from urban areas, including farm implements, clothing and other necessities. This domestic demand fueled economic growth in the urban areas, and the combination gave rise to broad-based growth (Sachs, 1987). Rosset (1999) argued that the example of the USA and more recently, Japan, South Korea, Taiwan, and now also China, demonstrates how equitable land distribution fuels economic development. Sachs (1987) said that small farmers rapidly

achieve high levels of purchasing power that guarantees domestic markets for fledging industries.

It is clear from the above that a vibrant small farmer section is needed for growth and development in developing economies. Another question that arises is the issue of small farmers on communal land. Surely the obvious benefit of ownership - even small-scale farm ownership - is absent in the case of the majority of African small farmers. Even so, the probability for Lesotho farmers to become large-scale commercial farmers is just about zero. The land tenure system in Lesotho is such that private ownership is not possible without dramatic changes in the political system (Lesotho Government, 2002). The underlying concept of the present customary land tenure system in Lesotho is that land is a national and social asset to be utilized for the benefit of the nation. This system entitles all households to have access to land for residential and agricultural purposes. Drastic changes in the land ownership policy can mostly result in a system of small-scale farm ownership but such changes are unthinkable at this point in time. However, it is important to take note of the important development role played by small-scale farmers in developing countries and the way in which land ownership can augment sustainable development.

2.3.2 Supplying Infrastructure and Rural Services

Infrastructure can be regarded as the backbone of economies in developed as well as developing countries since they provide the necessary support for the delivery of basic services to all segments of society (Clinton, 1996). The development of social infrastructure such as schools, hospitals, water supply, sewerage, waste disposal facilities, etc. has the potential to directly enrich the lives of people within a country or economy. Economic infrastructure on the other hand, is essential for economic activity and therefore has the potential to raise the standard of living of a country's people. Examples of economic infrastructure needed for economic development in newly industrialized countries are roads, rail, airports, power generation, water storage, information technology, communication, etc. (Norton and Alwang, 1993). Rostow (1960) and Auschauer (1989) argue that the efficient supply of infrastructure is a condition required for economic development. Norton and Alwang (1993) refer to infrastructure as capital accumulation and emphasize its importance

as one of the three major sources of economic development. Auschauer (1989) also points out that the decline in productivity in the USA was preceded by lower infrastructure investments. Hirschausen (1999), however, is one of very few economists who disagree by pointing out that no empirical evidence exists to support this argument.

The World Bank review of infrastructure policies (1994) provides examples of the impact of infrastructure development on economic growth and the relation between infrastructure and income levels. This study concludes that, although infrastructure development is necessary for development, its impact is not the same in all economies or in all sectors of the economy. The World Bank Development report points out that infrastructure development alone is not a precondition for economic growth (World Bank, 1994). It is also pointed out that the impact of infrastructure on economic growth varies not only by sector but also by its design, location and timeliness.

Gramlish (1994) did not deny the importance of infrastructure as a factor for economic growth, but he also could not find unambiguous empirical support for it. This has also been confirmed by other studies (Easterly and Robelo, 1993; Canning, Fay and Perotti, 1994 vs. Holtz-Eakin, 1994; Garcia-Mila, McGuire and Porter, 1996). Dodonov, Hirschausen, Opitz and Sugulov (2002) noted that the World Bank in its 1994 report concluded that the main reason for ambiguous research results is the use of macro-economic production function studies rather than the use of more disaggregated studies and studies of policy changes. Neil (1996) also put forward some traditional neo-classical arguments in favour of infrastructure as a factor involved in economic growth.

The literature clearly points out that opposing views and findings still exist concerning the exact relationship between infrastructure and economic growth (Gramlish, 1994; World Bank, 1994; Dodonov, *et al.* 2002). In a study in the Ukraine, Dodonov, *et al.* (2002), found that increases in private capital, public capital and the quality of institutional reforms have a positive impact on GDP. They came to the conclusion that infrastructure investments and policy reforms together have a positive effect on GDP growth in transition economies (Dodonov, *et al.* 2002).

Important, however, is the fact that the institutional environment supplements infrastructure development and together, these two factors have a decisive impact on economic growth (Dodonov, *et al.* 2002). Achion and Schankermann (2000) argued that competition by means of cost reduction and market selection will increase the impact of infrastructure adjustments on development. Jasinski and Ross (1999), however, warned that a competition policy without proper institutional support might impede rather than improve social welfare. Heinz (2000) also found a positive relation between infrastructure development and the ability of governments to implement policies. One can conclude from the various studies that privatization of infrastructure will increase the effect of infrastructure on development. Chile is a good example of this. During 1982, the Chilean government enacted a law that dismantled public utilities into three independent businesses and allowed private companies to enter the market. A privatization program was put in place. A few years later, some Chilean companies strengthened their financial positions so that they could expand throughout South America in countries that had opened their markets to competition (Mili, 2002). Many other countries later followed the Chilean example of privatization with positive results (Einhorn and Siddiqi, 1996; Galiana and Fink, 1998; Hunt and Shuttleworth, 1996). The World Bank then enforced this trend by means of a strict policy of binding loans for the initiation of reforms (Mili, 2002). Argentina also deregulated its power market in 1992, Peru in 1993 and Bolivia and Columbia in 1994. Most Central American countries followed in 1997 (Mili, 2002).

Chilean companies were able to cut energy losses by half in seven years, while Argentinean companies achieved this level in the three years following the reforms (Rudnick, Varela, and Hogan, 1997). The productivity and efficiency of the workforce also increased dramatically with the result that monthly wholesale electricity prices in Argentina went down by more than 40 percent. The productivity of the newly privatized distribution companies in Brazil also rose significantly, while energy losses decreased by 9 percent (Prates, 2001). As a result of privatization, competition and stringent quality standards enforced by laws in many South American countries, a noticeable improvement in the operational efficiency and reliability of electric power systems took place (Mili, 2002). It is generally recognized that the reform of

the electric power sector in South America was a great success and that the agricultural sector should not have reacted any differently.

2.3.3 Unleashing Markets and Trade Opportunities

Most countries in sub-Saharan Africa (SSA) embarked on structural adjustment and stabilization programs to reverse stagnating economic growth rates and severe macro-economic imbalances. Agricultural market reforms were at the forefront of the structural adjustment programs (SAPs) as a result of the importance of agriculture in all developing countries. The reforms were designed to promote private sector participation in agricultural marketing activities and to reduce or eliminate existing biases against the agricultural sector by aligning local prices with international ones, reducing overvalued exchange rates and minimizing government intervention (World Bank, 1981).

Market failures and market risks in the agricultural sector are sometimes very high in developing and under-developed countries. These risks are associated with asymmetric information, transaction costs and externalities (Mahé, 1997). The best way to tackle these risks is by improving the factors of market competitiveness in a country. Grote (2001) developed a framework as a systematic approach for analyzing the agricultural market of a country in terms of its determinants of competitiveness, which is directly linked to its market and government failures. Competitiveness of agricultural markets in developing countries is determined by the interaction between factors at four levels as indicated in Figure 2.1. These levels are the meta, macro, meso and micro level. Two groups of factors and trends may influence the agricultural market in a developing country and can cause serious barriers to trade for agricultural exports from a developing country at the meta level. The first category is the socio-cultural factors such as religion, language, values or attitudes. The political-economic global framework conditions such as the international trade regulations being set by World Trade Organization (WTO) is the second category at the meta level. These categories, in combination, may expose developing countries to potentially new non-tariff trade barriers like environmental standards, sanitary and phyto-sanitary standards, technical standards, and / or labeling schemes.

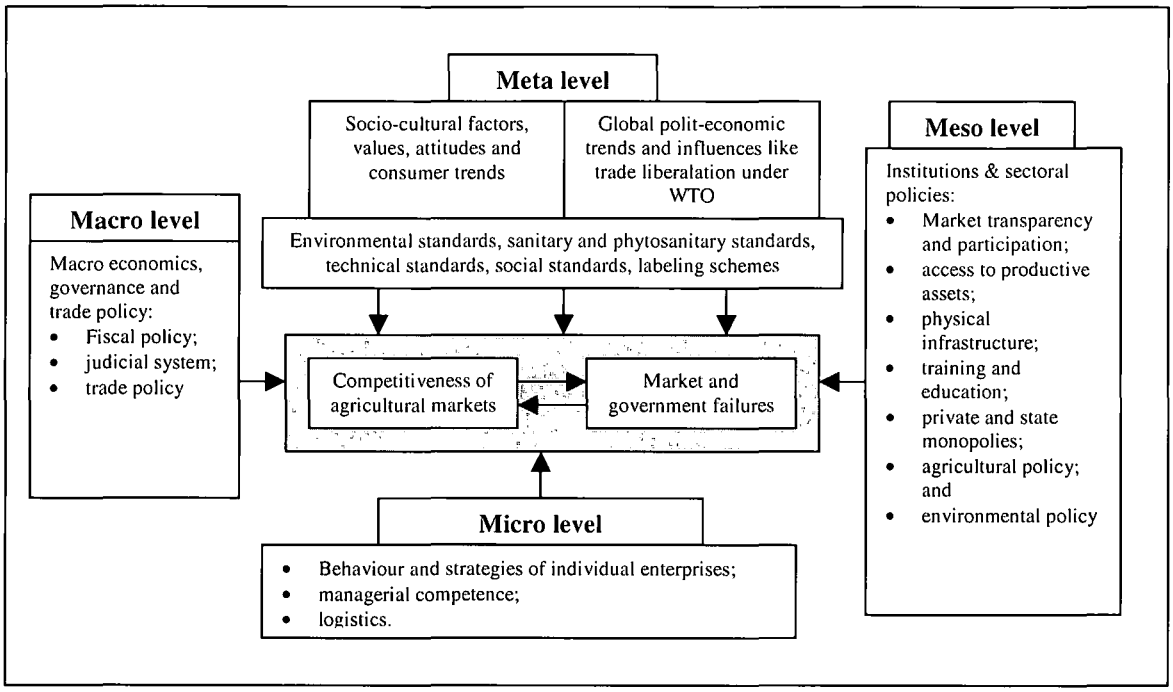

Figure 2.1: Determinants of competitiveness of and failures on agricultural markets in developing countries (Grote, 2001).

The macro-economic, political and legal framework for the agricultural market in a developing country is set at the macro level. The macro level determines the governance system in a country and it includes fiscal policy, trade policy, and judicial policies. At meso level, targeted policies and institutional changes may strengthen the competitiveness of the agricultural sector in a country. Sectoral policies are, for example, agricultural policy, education policy, or environmental policy. Institutions include standards organizations, testing and certification bodies, suppliers of inputs and services or state trading enterprises. Government failure often results in the insufficient provision of public goods and services, and thus impacts on the meso level. The behaviour and strategies of individual enterprises, their managerial competence and logistics form part of the micro level (Grote, 2001).

It is important that the right conditions should prevail at all of these levels for improved competitiveness of the agricultural market in a country in the context of trade liberalization. All factors at the four different levels and the interaction among them have to be taken into account when determining the competitiveness of the agricultural market in a developing country. At macro-level, an enabling environment needs to be established for meso- and

micro-level agents. The governance system at macro-level also determines the delivery of public goods and services at meso level (Grote, 2001).

2.3.4 Improving Agricultural Research and Extension

Successful agricultural development coupled with an increased life quality is the result of effective extensive services rendered by governments of sub-Saharan Africa (Wellard & Copestake, 1993). According to Binswanger & Deininger (1997), profitable agricultural enterprises depend heavily on sufficient and effective extension services. Agricultural extension services need well-trained agricultural extension practitioners. It is estimated that more than 75 percent of the 150,000 extension staff who currently work in ministries of agriculture, parastatal agencies and non-governmental organizations (NGOs) in sub-Saharan Africa do not possess university degrees. Most of them receive training only in technical agriculture, with very little exposure to the important human side of agriculture, including communication, rural sociology, problem-solving and critical thinking skills, and the capacity to work as a team. This contributed toward the unsuccessful attempts of governments in Africa to revitalize the agricultural sector in the rural areas (Swanson, 1990).

Ineffectiveness of extension services or technology transfer efforts can in many cases be attributed to the lack of co-ordination, the lack of clear leadership and the absence of links between research and the target group, namely the farmers (Eponou, 1995). In a study amongst emerging livestock farmers, Nell (1999) emphasized that inefficient extension systems do not contribute toward technology transfer amongst livestock farmers. It seems therefore that extension services alone are not a guarantee for technology transfer and development. The efficiency of that service also plays an important role.

Education of a country's population also contributes towards the efficiency of extension programs. What matters most for economic development in Africa is the capability of rural people to be efficient producers given their natural resource base (Lindley, Van Crowder & Doron, 1996). Economic and social development, and the benefits that accrue, such as improved nutrition and health, require an educated populace. No country has been developed without well-educated people and a strong agricultural base that provides food security.

Good educational systems will not solve all of the problems, but they are a prerequisite for sustained agricultural production and economic development (Lindley *et al.* 1996).

Delgado *et al.* (1999) pointed out that the benefits provided by technology development and extension in the industrial livestock sectors of developed countries largely accrue in the market place where the private sector plays the leading role in further livestock technology development and diffusion. The role of the public sector in developing countries became an issue since private companies rarely operate outside the industrial livestock sector. Educational, veterinary, research, extension, and input provision are not yet fully privatized in developing countries and in many cases cannot yet be privatized at prevailing stages of development. Delgado *et al.* (1999) and World Bank (2003) also stressed the importance of an increased focus on livestock productivity issues in developing countries, including post-harvest processing and marketing. They also point out that policy and extension programs not only need to facilitate the shift from increasing herd size to increasing productivity, but also need to steer this development away from over-intensification and environmental degradation.

The most important technological developments taking shape in the livestock sector are in genetics and reproduction, feeding, and animal health. These new developments probably will be widely in use by 2020. Delgado (1999) pointed out that demand-driven production systems in developing countries would most likely adopt these technologies fairly rapidly. Most of these systems will be in East Asia, peri-urban India, and Latin America outside the Andean areas. Where demand is growing less quickly (most areas of South Asia, sub-Saharan Africa, and the Andean countries), technology uptake will be slower and important pockets of technological stagnation will remain. Several researchers argue that public sector research and extension for livestock will have a high pay-off in the fast growing areas if they complement private sector activity and facilitate access to small farmers. They also point out that public sector research and extension will provide the main technological vehicle for addressing technological changes in slow growing areas (such as Lesotho) (Delgado, *et al.* 1999).

Several studies conclude that research and extension programs should, instead of emphasizing the maximisation of outputs, rather focus on ways to use the livestock sector as a foundation to improve food security and alleviate poverty and at the same time minimise the adverse effects of public health and the environment (Orsklov and Viglizzo, 1994; Rosset, 1997; Delgado, *et al.* 1999; World Bank, 2003). The development of efficient research and extension programs requires the creation, dissemination, analysis and use of policy-relevant information concerning livestock production (Delgado, *et al.* 1999). The transfer and research of technology contributing to an increase in profits or the maximization of outputs are not sufficient and may not contribute towards the development process in the livestock sector. The social, economic and ecological dimensions within a country or community interacting with the livestock sectors are equally important and should form part of a holistic approach in research and development (Ostrom, Schroeder and Wynne 1993; Foster and Rosenzwig, 1995; Delgado, *et al.* 1999; World Bank, 2003)

2.3.5 Developing Human Capital and Institutions

In most countries of the world, particularly in developing countries, human capital development is a greater challenge today than at any time in the past. Enormous gaps still exist in the understanding of this challenge, because most prominent economists, institutions developers and donor countries in the past focused more on the importance of institutions, infrastructure, capital and labour as engines of growth and neglected the most important one, namely human capital development (United Nations, 1988). Borgonovi (2002) refers to the term human capital as personal knowledge, competencies, attitudes, will, and behaviour rather than human capital. He also points out that economic development over the past two decades have been based on international loans, privatization, competition between companies and nations, and the localization of manufacturing and administrative processes in low-cost countries where labour costs are low.

Most sociologists might over-emphasize the role of human capital in development in contrast to most economists who support the neo-classical growth models developed by Robert Solow and Trevor Swan in the 1950s. These models emphasized that economic growth is a response to the larger inputs of capital and labour (Norton and Alwang, 1993, Hasan, 2002). Non-

economic variables such as human capital and human health were ignored in these early models. According to these models, the economy also conformed to the law of diminishing returns to scale. The implication of the neo-classical model with the law of diminishing returns to scale as its basis, assumes that, as capital stock increases, the growth of the economy will eventually slow down. It must therefore capitalize on technological progress for continuous growth. This means that technological progress is exogenous to this growth model. According to Hasan (2002), the reality is contrary to that in the East Asian countries where economies kept growing for well over three decades.

The role of human capital and other social variables in economic growth and development is clearly illustrated in different studies conducted in East Asian countries. Hasan (2002) argued that other factors outside the realm of the neo-classical growth model contributed to this high growth performance. Because of this, a new paradigm was developed during the mid 1980s known as the endogenous growth models (Romer, 1986). The new endogenous growth models argued that the law of diminishing returns to scale might not be true in the case of the fast growing East Asian economies. This implies that economies that invest in capital also employ educated, skilled and healthy workers who are productive and are able to use the capital and technology more efficiently. This then leads to the *"Hicks neutral"* shift in the production function with increasing rather than decreasing returns on investments (Hasan, 2002). This means that technology and human capital are both endogenous to the system.

Empirical results in studies conducted in East Asian countries that experienced increased growth during the past decades substantiate the following premises:

- The nations in the Asian region with broad based healthy human capital (such as East Asian developing countries) grew faster than the ones (such as Asian least developed countries and South Asian developing countries) where these elements were missing. The studies *inter alia* conclude that there is an **important link between healthy human capital and the rapid economic development of a nation.**
- The study also found that the fast growing countries were the ones that invested far more in human capital on a per capita basis than other nations under similar

economic predicaments with comparable per capita incomes. They conclude that **it is the commitment and priority of a nation rather than other economic factors alone** that enabled East Asian developing countries to outgrow other countries.

- The studies also pointed out that the gestation period for human capital investment is much longer than physical capital investments. **Thus, unlike physical infrastructure investment, human capital development investment is a long- term as well as a continuous proposition**.

Borgonovi (2001) pointed out that knowledge, competency and skills are mandatory conditions for every country to become the owner of its own development. He mentioned that ethics is the necessary fuel of human behaviour and without ethics no markets can achieve a sustainable equilibrium and no public institution can pursue the well-being of the community it is responsible for. Pritchett (2001), however, stressed that it is difficult to attribute larger pay-offs specifically to better education. It seems that two alternative views exist insofar as the role of human capital building or education and technology are concerned (Pack, 2003). According to the first view, they are seen as inputs in the production function which is typical of studies that found little pay-off to education. The second view supported the work done by Nelson and Phelps (1966). They argued that education (human capital development) will have its greatest impact when there is rapid technological change and workers and managers are challenged to understand the technology and adapt it to suit local conditions. The Nelson-Phelps view implies that education has a pay-off mainly in the presence of new technical impetus. Other studies that substantiate the Nelson-Phelps view include studies conducted amongst United States farmers (Welsch, 1969) and in Indian Agriculture (Foster and Rosenzwig, 1995). Both studies found that better educated farmers are more effective in utilizing new technology.

Interesting, however, is that evidence supporting this theory is largely negative in the manufacturing sector. Pack and Paxson (2001) show that in a large sample of factories in Ghana, Kenya, and Zimbabwe, the presence of highly educated managers and workers conferred no productivity benefit on the firms at which they were employed. They came to the conclusion that the firms use largely static technologies that have been used for a long

period and workers have already learned how to use them effectively. Due to the fact that the firms are incapable of obtaining foreign exchange for the import of new technological elements, the presence of educated personnel is not to the benefit of these firms.

Institutions and human capital are so narrowly interwoven that the one cannot be separated from the other. Institutions are *"the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction"* (North, 1990). The term *"institutions"* denotes both formal institutions such as the local and national state institutions, rules that govern property rights, businesses, churches, schools and informal institutions such as associations, networks, agreements, etc. (Putman, 1993). Ostrom, Schroeder and Wynne (1993) refer to institutions as the *"people"* and the patterns of regular, repetitive interactions that transform inputs into outputs.

Several studies found that weak, ineffective, corrupt or narrowly based institutions create uncertainty and unfairness within communities. These institutions also discourage saving and investment, resulting in lower growth rates. It was also found that if the rules of law and judicial institutions are seen as ineffective or biased with insecurity in property rights, investments for land improvements are discouraged (World Bank, 2003; IFAD, 2003). Studies also showed that inefficient and unreliable markets that are captured by narrow based groups, engender distrust and raise the transaction costs of economic activities, which naturally affects poor producers particularly harshly. Not only does this entrench poverty, but it also reduces economic opportunities for all (IFAD, 2003). The IFAD (2003) came to the conclusion that widely accepted institutions (including organizations and rules) that respond to the needs and priorities of poor groups, especially rural poor and women, are essential for rapid poverty reduction and economic growth.

Research has shown that the liberalization programs adopted by many developing countries during the past two decades have had limited success in developing private, efficient and competitive agricultural markets. Instead risks and transaction costs remained high and policies designed to improve incentives for agricultural production often had little impact on small farmers and the rural poor (IFPRI, 2003). Evidence suggests that the lack of proper institutional and structural programs contributed toward this problem. According to IFPRI

(2003), four main types of institutions can contribute to well-functioning agricultural markets and development in general:

- Marketing institutions such as co-operatives, farmers' and traders' associations, credit clubs, commodity exchanges and contract farming.
- Infrastructural institutions such as those regulating or maintaining public goods, including roads, communication networks, extension services, storage facilities, and market information services.
- Regulatory institutions such as laws regarding market conduct and the enforcement of contracts, ownership rules and property rights, and grades and standards.
- Government and political institutions that have the capacity to monitor the emergence of markets and support their development.

It is clear from the literature mentioned that human capital is complementary to proper institutions and *vica verca* for the development of any country. Although very important, human capital and institutions are only two of the benefactors to the development process. It is important to note that the Asian countries (Hong Kong, Korea, Taiwan, Singapore) which are usually cited as examples of countries having benefited from substantial human capital accumulation, were also characterized by other complementary features (Pack, 2003).

An excellent example of the importance of institutions is found in a study conducted by D'Haese, Verbeke, Van Huylenbroeck, Kirsten & D'Haese (2003) amongst small-scale wool producers in the Transkei[1]. They investigated the effect of the membership of local shearing shed associations on farmers' revenue. The empirical analysis conducted in that study shows that if smallholder farmers gain access to a better market in an alternative, more efficient supply chain, they can benefit from the higher selling price. They also concluded that the shearing shed has the potential to increase the effectiveness of marketing because of lower transaction costs as a result of bulking the produce. Furthermore it was evident that the bargaining power and access to information increased. Another advantage for the producer making use of shearing sheds is the decrease in uncertainty caused by disguised information

[1] Former "homeland" in the Eastern Cape Province, South Africa.

and the risk of opportunistic behaviour by the buyer (Williamson, 1975, 1996; D'Haese, *et al.* 2003). D'Haese, *et al.* (2003) also argued that intervention by supplying shearing sheds is an example of a state intervention with the objective to act as a catalyst to complement the market and to correct market failures. They concluded that *"the building of shearing sheds and the promotion of a local association has the potential to promote and sustain economic development in the poor rural areas, by increasing the farmers' income and generating producer and consumer linkages to the benefit of the community".*

2.3.6 Strengthening Community- and Producer-based Organizations

Community- and producer-based organizations are in actual fact types of institutional arrangements as discussed in the previous section. It is important, however, to focus separately on this issue because of its particular relevance to wool farmers and the wool industry in Lesotho.

The co-operative movement as a producer-based organization has been described as the largest socio-economic movement in the world, for it has nearly 800 million individual members. Membership statistics of the International Cooperative Alliance (ICA, 1999) indicated more than 700,000 cooperative societies in the world, and more than 500,000 of them are in developing countries. This is actually an understatement of the movement's size as it excludes non-affiliated organizations. Cooperatives are active in every type of economy and in almost all sectors (Pawlowska, 1996).

Ex-Secretary-General Perez de Cuellar told the General Assembly in 1987 of *"sound evidence that cooperatives are an invaluable institution for promoting social and economic development, and achieving a more equitable distribution of income"* (Thordarson , 1990). Cooperatives as an economic and social system are not based on a single theory, but on a collection of many concepts such as self-help, non-exploitation, mutuality and equitable sharing of gains and losses. In an attempt to codify these concepts, the International Cooperative Alliance has set down six principles as guidelines for accepted cooperative behaviour (ICA, 1999). These are the following:

- Open and voluntary membership;

- democratic control;
- limited interest on shares;
- return of surplus to members;
- cooperative education; and
- co-operation among cooperatives.

Cooperatives see themselves as an alternative between private businesses and state-owned enterprises in western countries. In developing countries on the other hand, they are often instruments for securing local ownership of industries and as a means of involving people in new economic activities (ICA, 1999). Cooperatives basically comprise individuals who voluntarily join a social group ("cooperative society"). At the same time the cooperative represents a business unit, which has to be registered to participate in economic life ("co-operative enterprise"). Hence, cooperatives are characterised by their dual nature (Wolz, 2000). In addition, there is a twofold connection between a member and the cooperative. On the one hand, a member is a shareholder and therefore co-owner of the co-operative enterprise. On the other hand, a member is a client of the co-operative and may take advantage of its offered services. It follows that members are integrated simultaneously as holders (i.e. providers of capital or shares), clients (e.g. making use of the activities offered) and decision-makers or controllers ("identity principle") (Harms, 1996).

Cooperatives in developing countries have been mainly active in agricultural marketing and in advancing farm credit and the sales of farming inputs (Thordarson, 1990; Wolz and Namerova, 1998; Kirsch and Ottfried, 1998). A number of them operate as government-backed monopolies: for instance, cooperatives dominate the marketing of coffee in Kenya and of sugar in India. By ICA statistics, there are nearly 48,000 multi-purpose cooperatives, combining several services; and there are countless informal associations, sometimes called "pre-cooperatives" (Thordarson, 1990).

Since the last half of the 19th century, farmer-owned cooperatives have provided farmers a stronger presence in the market place and greater bargaining power to control the costs of inputs and the value of outputs. These new forms of agricultural cooperatives are commonly referred to as "value-added co-ops" or "new generation co-ops." Even in a developed country

such as the US, 2,200 marketing co-ops sold 31 percent of all U.S. farm commodities and 29 percent of the nation's farm supplies during 1994. The 240 farm credit cooperative banks granted 25 percent of all agricultural loans during the mid 1990s (USDA, 1996). But as the costs of inputs continued to rise and the prices of commodities to fall, farmers needed ways to add value to the raw materials they produced. Rather than only growing and selling commodities, many value-added agricultural cooperatives had formed to process crops and to return added value to producers rather than to middlemen. While value-added dairy and fruit cooperatives are not a new phenomena, a new generation of diverse cooperatives is on the rise such as corn-processing co-ops that produce ethanol and fructose, and cooperatives owned by wheat farmers producing pasta (USDA, 2000).

Cooperatives play an integral part in the economies of most developing countries and these cooperatives can be categorized into three main groups: Firstly, the large-scale marketing cooperatives, secondly, the multi-purpose cooperatives and thirdly, the grass-roots cooperatives (Thordarson, 1990). The latter two are of great importance for Lesotho. The multi-purpose cooperatives refer to the type that was formed to provide credit to farmers, supply agricultural inputs, organize storage and marketing facilities, process crops, and carry out other functions. Cooperatives at local level were linked, by vertical integration, to primary cooperatives or national systems in many African and Asian states, e.g. in Nigeria and in the Philippines. Governments in Algeria and Tanzania saw multi-purpose cooperatives as a way to combat capitalism and to contribute to a planned economy. In Egypt and Ethiopia the governments used them to carry out land reform and to bring about other social changes, and anyone wishing to achieve these benefits, had to join the cooperative. Few, if any, of these cooperatives were inspired or started by the members themselves. They were usually government-inspired entities (Thordarson, 1990).

The grass-roots cooperatives on the other hand, emphasize the role of cooperatives as self-help organizations that are controlled by their members at local level. Most of them concentrate on single-sector activities that require simple management skills. Some avoid incorporation (and government control) by registering as pre-cooperatives or associations. The inspiration and motivation for these institutions come from local populations, who often practise traditions of self-help. Good examples are the savings clubs or *"stokvels"* and burial

societies in South Africa and other parts of Africa (Thordarson, 1990; Bbenkele, 2003; Coetzee, Schoeman and Willemse, 2003).

Women, who are often excluded from agricultural marketing cooperatives because of the legislative requirement in some developing countries that members should occupy or own land, dominate other kinds of cooperatives. Women's dairy cooperatives for owners of one or two family animals thrive in India (Harms, 1995), while three-quarters of the 22,000 members of credit unions in Lesotho are women (Lesotho Government, 2003). Many of these co-ops help to reconcile the so-called 'informal sector' with the mainstream economy; some examples are credit unions for Indonesian street peddlers and furniture-making co-ops for unemployed workers in Benin (Thordarson, 1990).

Well-managed cooperatives in developing (and developed) countries have economic benefits such as greater market competition, economies of scale and expanded returns for its members as well as towards national development goals. The social benefits to be highlighted include skills development (building human capacity) and schooling in democracy (Thordarsen, 1990; Harms, 1995). The other benefits include the need for new services and the provision of local services after the withdrawal of external assistance. Developers realize that the focus on grass-roots cooperatives might yield larger benefits in developmental strategies (Thordarsen, 1990; Harms, 1995; Kirsch and Ottfried, 1997; Wolz, 2000).

2.4 LIVESTOCK PRODUCTION IN DEVELOPING COUNTRIES

Livestock ownership currently supports and sustains the livelihoods of an estimated 675 million rural poor (FAO, 2003). Animal agriculture is the largest single sector of agricultural economies in most transitional and developing countries (USAID, 2003). It often contributes significantly to the GNP (1/3 of the agricultural GNP in sub-Saharan Africa). In world trade, animal products represent a value more than double that of grain (Renard, Chaussepied and Risopoulos, 2000). About 60 percent of the world's pasture land (about 2.2 million km^2), just less than half the world's usable surface, is covered by grazing systems. Distributed between arid, semi-arid and sub-humid, humid, temperate and tropical highlands zones, this supports about 360 million cattle (half of which are in the humid savannas), and over 600 million sheep and

goats, mostly in the arid rangelands (World Bank, 2003). An estimated 70 percent of the poor are women for whom animal production is one of the most important assets and sources of income. Developing countries consume nearly half of the global meat supply. Since the early 1980s, milk consumption in terms of quantity, monetary value and calories increased twofold in the developing world. In poor households, livestock are a key means of investment, and assist in offering a type of insurance against drought and crop failure. In addition, livestock production is important in the creation of job opportunities (FAO, 2003; USAID, 2003).

The livestock sector is undergoing a profound transformation worldwide, influenced by the following four factors (Delgado, Rosergrant, Steinfeld, Ehui and Courbois, 1999; Renard *et al.* 2000):

- The general increase in income in certain countries;
- the decrease in prices which has made it possible to diversify diets;
- population growth; and
- urbanisation.

The consumption of animal products in the developing countries has constantly increased over the last 20 years, and will certainly continue to rise. The greatest sectoral growth in the world now takes place in developing countries, but the production has increased more slowly than the overall demand. Globally, the deficit between supply and demand will probably increase; in sub-Saharan Africa, for example, the production of red meats, which currently satisfies 56 percent of the total consumption, will only cover 36 percent of needs in 2020 (Renard *et al.* 2000). A desirable trend already perceptible is the improvement in the competitiveness of production by means of intensification in countries where the growth in demand is strongest (Delgado *et al.* 1999). As a result of intensification, the use of cereals for animal feed has greatly increased in the developing world and should continue to grow (up to around 300 million tonnes per year from now until the year 2020) (Renard *et al.* 2000). The growing demand for animal products could thus become a driving force in the development of grain production and in this way could offer a good opportunity for agricultural development. Delgado *et al.* (1999) referred to this and mentioned that livestock can be considered as the driving force of the "*next food revolution*".

Livestock in developing countries are central to the livelihood of the rural poor in at least six ways (Sere and Jarvis, 1992; Delgado *et al.* 1999; Renard *et al.* 2000; Adams and He, 2003; FAO, 2003; USAID, 2003).

- Firstly they are an important source of cash income;
- secondly, they are one of the few assets available to the poor, especially to poor women;
- thirdly, livestock allows the poor to exploit common property sources, such as open and communal grazing areas, in order to earn an income;
- fourthly, livestock provides a vital and often only source of income for the rural poor and most marginalized people;
- fifthly, livestock products enable small-scale subsistence farmers to diversify incomes, helping to reduce income variability, especially in semi-arid regions characterized by one cropping season per year;
- lastly, livestock manure and draft power are vital to the preservation of soil fertility and the sustainable intensification of farming systems in many developing areas facing increasing population density.

The importance of draft power in developing countries is more than often ignored by policy-makers and developers. Table 2.1 clearly illustrates the value of draft power in developing countries. It is shown in Table 2.1 that 82% of the total draft power in Africa is obtained from animals, 99% in the Far East, 75% in Latin America and 89% in Brazil, compared to only 4% in South Africa, 1% in the US and 12% in Germany (Waittiaux, 2000).

Several studies in developing countries show that the poor and landless derive a higher share of their household income from livestock sources than do the relatively better-off households in the same countries. Fitch and Soliman (1983) found that 63 percent of the income of landless households in Egypt during the mid 1970s came from livestock in comparison to only 14 percent in the case of large landowners. Von Barun and Pandya-Lorch (1991) also identified four countries where the poorest receive a greater percentage of their income from livestock than the better-off. Adams and He (1995) conducted a similar study in Pakistan and found that 25 percent of the income of the poorest households came from livestock compared

to 9 percent for the higher income group. An exception to these results is found in a study conducted in Brazil by Vosti, Witcover and Carpentier (1998).

Table 2.1: Draft power sources and totals for a few selected countries (Thousands of mega-calories)

Region/Country	Animal	Mechanical	Total	% from Animal
	Thousands of Megacalories per year			
Africa	2,095	449	2,544	**82**
Far East	19,591	282	19,873	**99**
Near East	3,320	436	3,756	**88**
Latin America	6,731	2,289	9,020	**75**
USA	28	21,238	21,266	**1**
India	15,481	119	15,600	**99**
Turkey	1,480	192	1,672	**88**
Brazil	2,604	326	2,930	**89**
South Africa	24	535	559	**4**
Germany		3,453	3,831	**12**
France	902	2,883	3,785	**24**
Spain	536	520	1,056	**51**

Source: Waittiaux, (2000)

Limited access to land and capital are some of the main reasons why poor people are not able to increase their incomes. Livestock production offers one of the few rapidly growing markets that poor rural people can join even if they lack substantial amounts of land, training and capital (Delgado, *et al.* 2003). Livestock also plays an important role towards including women in rural economies (Quisumbing, Brown, Feldstein, Haddad and Pena, 1995). Evidence of the important role of dairy co-operatives as a means of empowering women is found in several studies conducted in East Africa (Brokken and Seyoum, 1992), Bolivia (Valdivia, Dunn and Sherbourne, 1995) and India (Schneider, 1995).

Orskov (1999) rightly asked whether developers and governments pursued the right science for development. He pointed out that the motive for livestock farming in developing countries differs dramatically from the goals of livestock farming in developed countries. This fact is of particular importance when considering the efficiency and productivity of the Lesotho livestock systems. The main contrasts between the main goals and objectives for livestock production in market-driven industrialized countries and less industrialized

countries are summarized in Table 2.2 (Gupta, Patel and Shah, 1989; Orskov and Viglizzo, 1994).

Table 2.2: Goals and objectives of livestock production in market-oriented livestock systems and livestock systems in less industrialized countries

Classification	Alternative risk-spreading research approaches	
	Market-oriented systems	Less industrialized countries
Overall goals	Profit maximization Cash generation Productivity	Risk minimization Family support Stability and sustainability
Scientists' role	Design of systems	Management of ecosystems
Intermediate targets	Genetic homogeneity Increased production potential Single-purpose animals Nutrient mobilization	Biological diversity Improved maintenance potential Multi-purpose animals Nutrient storage
Philosophical approach	Cartesian (specialized)	Holistic
Scientific approach	Single-disciplinary	Multi- and trans-disciplinary
Statistical emphasis	Mean Main effects	Variance Interactions

Source: Gupta, Patel and Shah, (1989); Orskov and Viglizzo, (1994)

Orskov (1999) argued that while profit maximization is the motive for market-oriented systems, risk minimization is the goal in social value oriented systems. Many other comparisons are drawn, including the fact that animal breeding for homogeneity has profit value in market-oriented systems, whereas diversity has survival value in social value oriented systems, as the environment cannot be controlled. The predominance of research to increase milk and meat production in capital-intensive systems from grain and cultivated forages over research in labour intensive livestock products in social value oriented systems from crop residues and natural pastures has also been pointed out, though on a global scale these are the most important.

The use of Artificial Insemination (AI) in market-driven systems is explicable, but the survival value of diversity in developing countries is greatly underestimated due to the fact that animals have to be adaptable to environmental fluctuations and respond to extremes such as temperatures, drought, hunger, poor disease control, etc. Secondly, as seen in Table 2.2, the animals are almost invariably dual or multipurpose rather than single purpose and as such the breeding goals are difficult to define (Orskov, 1999).

From the point of view of data analysis there has also been major consequences in so far as that in the one situation the mean and main effects may be the most important, while for the survival and social value oriented system, the variance and interaction may be equally or more important (Orskov, 1999).

The contribution of products such as meat, milk, wool and draught power is easily measurable, but there are many other important products for which an economic value is difficult to quantify, for instance: How can the contribution to security and risk aversion best be evaluated? These products are, however, extremely important, perhaps on a global scale the most important products of all. The contribution to comfort is also difficult to quantify, as well as their often positive contribution to crop yield and soil fertility (Orskov, 1999; World Bank, 1999; Renard *et al.* 2000).

Livestock production may provide some opportunities for rapid growth in poor rural areas. The poor around the world have shown their ability to produce and farm with livestock and the future of this sector as a whole looks good. However, policy-makers and researchers urgently need to find the best market-oriented means, so that small-scale farmers can benefit from the world-wide growth in this sector. Policies will therefore have to focus on rural organization and institutional arrangements favouring livestock production and marketing. Livestock production could provide one of the major operational themes in effective rural poverty alleviation over the next two decades. Recent development policies have tended to distort livestock development in favour of intensive and large production units, and failed to promote vertical co-ordination of small operators with processors and other role players (Delgado *et al.* 1999).

2.5 AGRICULTURAL POLICY IN DEVELOPING COUNTRIES

In order to fully understand the policy development dilemma faced by wool farmers in Lesotho, one must first consider and understand the development paradigms policy-makers and farmers were faced with in Africa. The lessons learned from other African countries as a result of policies might provide valuable insight into the problems experienced by Lesotho wool farmers today. African agricultural policies and the development of development

strategies have been heavily influenced by a relatively small group of donor countries, agencies and expatriate thinkers in the allocation of public goods investments (including those affecting agriculture). The presence of local agricultural specialists has been limited, local institutional development has been weak, and strong government has often been absent. This has led to at least nine qualitatively different dominant agricultural paradigms developing since the 1900s, all heavily influenced by actors outside Africa. Generally sequential in time, these paradigms, discussed below, have been applied evenly across the region, taking little note of country-specific conditions (Delgado, 1997).

- **Commercialization via cash cropping (1910-70).** This was primarily a growth strategy, focusing on raising productivity in areas of comparative advantage by means of technical assistance, extension, and capital transfers from abroad. This process began under colonial rule and took off in earnest after the Second World War, during times of improving world commodity prices. Under this paradigm, agriculture was viewed as a source of resources for industrialization.
- **Community development (1955-73) and participatory development** (and integrated rural development at a later stage) entered development ideology in Africa around the time of preparation for decolonization. Community development placed increased emphasis on the schooling, skills, and health of agricultural laborers and promoted cottage industry.
- **The basic human needs (1970-79) paradigm** argues for a direct approach to meeting the basic needs of the poor. Smallholder farmers and food production rather than export cropping, more for distributive than for growth objectives, became the focus areas.
- **The regional integration in industry, national self-sufficiency in food paradigm (1970-79)** runs concurrent with the basic human needs paradigm. The post-1973 deceleration in the growth of world trade and the appreciation of real exchange rates discouraged export production and resulted in increased food imports. These paradigms of the 1970s viewed agriculture as a resource pool, much as the cash croppers did, but provided no new incentives for increased production.

- **The structural adjustment and demand management paradigm (1980-84)** was based on World Bank structural adjustment programs. Export agriculture and the emphasis on indirect economic mechanisms were the focus areas of this paradigm. The structural adjustment programs focused on correcting the artificially distorted price incentives in favour of producers and on devaluation and fiscal austerity measures.
- **Supply shifters in agriculture (1973-89)** re-emerged, focusing on boosting food production.
- **Regional integration, with food first (1973-89)**, a reinvention of regional integration in industry, came as a reaction to the rising world agricultural prices and continuing growth of food imports.
- Macro-economic adjustment with programs to mitigate the impact on the poor led to structural adjustments focusing on **equity with growth since 1985**.
- The current post-cold war paradigm is focused on **sustainable development** and this paradigm is still continuing.

The importance of livestock production in developing countries has already been highlighted. It would therefore be foolish for any government to adopt a *laissez faire* policy on livestock development. Delgado *et al.* (1999) provided four important pillars on which developing countries should base their development strategies. These are the following:

- Removing policy distortions that artificially magnify economies of scale in livestock production;
- building participatory institutions of collective action for small-scale farmers that allow them to be vertically integrated with livestock processors and input suppliers;
- creating the environment in which farmers will invest in ways to improve productivity in the livestock sector; and
- promoting effective regulatory institutions to deal with the threat of environmental and health crises stemming from livestock.

2.6 CONCLUSION

The literature study clearly shows that it is possible for developing countries in Africa such as Lesotho to develop and resolve its status as a poverty-stricken and under- development country. The potential (natural, human, economical, etc.) exists to create a vibrant economy and support its populace. Various factors, however, play an important role in this development pathway. Firstly, the country and the economic systems in the country must be competitive and sustainable. Efficient development policies are the directives for sustainable growth and development. It is clear from the literature study that governments with sound development policies have managed to lift their countries out of their poverty traps. It is also clear that all efficient development policies have a holistic and comprehensive approach that addresses various issues and sectors simultaneously.

Most literature in one way or another agrees that labour, natural resources, capital accumulation, increase in scale and specialization, improved efficiency and technological progress are the foundations for economic growth and development. Researchers, economists and development agents agree that the following important issues should be included in development strategies:

- The revitalizing of the smallholder section;
- the supply of infrastructure and rural services;
- the unleashing of markets and trade opportunities;
- the improvement of agricultural research and extension;
- the development of human capital and institution; and
- the strengthening of community- and producer-based organizations.

The importance of the livestock sector as an engine for growth has been highlighted. Nearly all the under-developed and developing countries rely on the extensive livestock system for the support of the majority of its poor and rural people. Unlocking the real potential of livestock systems as a stimulus for growth, necessitates an all-encompassing development strategy that successfully includes all the issues addressed in this chapter.

CHAPTER 3

LESOTHO IN CONTEXT

3.1 INTRODUCTION

Understanding of the challenges and potential of the wool industry in Lesotho requires knowledge of the total state of affairs in the Kingdom of Lesotho and its people. As has been shown in Chapter 1, development in developing countries depends on a variety of interdependent issues. The growth potential of an industry such as the wool systems in Lesotho also relies on the natural resources of the country, proper infrastructure, well managed and efficient institutions, capital and competent people to manage the industry at micro- and macro-level. This chapter provides a literature study regarding Lesotho as a country, the people, the natural resources, the economy, trade, the agricultural sector, the government and certain policies that have an impact on the wool industry.

3.2 POLITICAL HISTORY OF THE LESOTHO GOVERNMENT

The Basotho, the inhabitants of Lesotho, were brought together from scattered ethnic groups in the 19th century by King Moshoeshoe I and settled in this mountainous region of southern Africa. The Kingdom of Lesotho became a British Protectorate in 1868 upon a request by the King. Lesotho regained independence in 1966, and functioned as a multi-party democracy from independence until 1986, when a military regime took power. The country returned to a system with proportional representation in 1993, although it remains a constitutional monarchy. The country was under military leadership from 1986 to 1993, when democracy was restored with the election of a government led by the Basotho Congress Party (BCP). The BCP split in 1997 and the majority of the members of parliament supported the prime minister in establishing a new party, the Lesotho Congress for Democracy (LCD). The LCD, led by Pakalitha Mosisili, won all but one of the seats contested in the parliamentary election held in May 1998, which precipitated civil unrest and the establishment of the Interim

Political Authority. The LCD subsequently won the parliamentary elections that took place in May 25, 2002 (Lesotho Government, 2002).

3.3 ECONOMY

The economy of Lesotho is based mainly on subsistence agriculture, livestock, remittances from miners employed in South Africa, and a rapidly growing apparel-assembly sector. The number of mineworkers has declined steadily over the past several years. A small manufacturing base depends largely on farm products that support the milling, canning, leather, and jute industries (World Bank, 2002). Agricultural products are exported primarily to South Africa. Proceeds from the membership of a common customs union with South Africa make up the majority of government revenue. Although drought has decreased agricultural activity over the past few years, completion of a major hydropower facility in January 1998 permits the sale of water to South Africa, generating royalties for Lesotho. The pace of privatisation has increased in recent years. In December 1999, the government embarked on a nine-month International Monetary Fund (IMF) staff-monitored program aimed at structural adjustment and stabilisation of macroeconomic fundamentals. The government is in the process of applying for a three-year successor program with the International Monetary Fund (IMF) under its Poverty Reduction and Growth Facility (World Bank, 2002).

In order to attain its macroeconomic objectives, the government of Lesotho is continuing to place high priority on parastatal privatisation and private sector development. This strategy forms the primary source of growth and employment creation. Based on free market principles and private ownership of property (except for rural land), the Lesotho economy presents a relatively open economic and business climate. Any institutional and regulatory constraints that impede growth are being addressed (Lesotho Government, 2002).

Lesotho's fiscal policy for 1999/2000 and beyond is focused on maintaining budgetary expenditure at sustainable levels. Characterised by the growing importance of the private sector and increased globalisation of production and trade, the economy of Lesotho faces the beginning of a purposeful development phase (Lesotho Government, 2002).

The slow-down in the world economy during 1998/99 has had far reaching effects on developing countries, with declining aid and private capital flows to emerging markets. South Africa itself has the most developed and well-diversified economy in the region, with agriculture, mining, secondary industry, commerce and a broad structure of service establishments contributing to the wealth of the nation. Lesotho's ability to achieve its sustainable human development objectives is closely linked to the evolving economic and political dynamics of this larger neighbour, as well as other countries in the Southern African Development Community (SADC). Economic swings in South Africa present the largest single influence on Lesotho's economy, with inflation following the trends in South Africa. Proceeds from Lesotho's membership in a common customs union with South Africa form the largest part of government revenue and is significantly affected by events taking place in the world economy (CIA, 2002).

Lesotho has a marked inequality in income distribution with serious unemployment or underemployment problems. Only about 700 000 of a total population of 2 207 984 are economically active. It is estimated that 49.2% of the total populace are living below the poverty line. Of the resident population, 86% are engaged in subsistence agriculture and 35% of the active male wage earners work in South Africa (CIA, 2002).

The estimated national purchasing power parity for 2001 was $5.3 billion with a per capita purchasing power parity of $2 450 for the same year. GDP contributions per sector are 16.3% from agriculture, 42% from industry and 41.7% from services (World Bank, 2002). Exports for 2001 add up to $250 million (free on board) with the South African Customs Union (53.9%) and North America (45.6%) as the two major trading partners. Commodities traded are mainly manufacturing (clothing, footwear, road vehicles), providing 75% of the total value traded. The other 25% of trade is from wool and mohair, food and live animals. Commodities imported are mainly food, building materials, vehicles, machinery, medicines and petroleum products, with a total import value of $720 million. The major import trading partners are the South African Customs Union (89.5%) and Asia (7%) (CIA, 2002).

The Loti is pegged to the South African rand at parity under the Common Monetary Union (CMA) agreement. The Rand is a legal tender in Lesotho. The CMA comprises companies from South Africa, Lesotho, Swaziland, Botswana and Namibia. Lesotho is a member of the

Southern Africa Customs Union together with Botswana, South Africa, Namibia and Swaziland. There are generally no import restrictions on goods moving between the five countries. The framework of the external tariff of Lesotho is the two-column Harmonised Commodity Coding and Description System (HS) (World Bank, 2002).

At the end of 2001 Lesotho's external debt was $715 million. The total amount of economic aid received internationally was $123.7 million for 2001 (World Bank, 2002).

The construction of the Lesotho Highlands Water project (LHWP) boosted not only the construction industry in Lesotho but also the economy in general due to extra job opportunities and extra money available in the national economy. The garment sub-sector consists of about 20 000 people employed in small and medium scale enterprises (SME's), 90% of which are women. The agro-industrial sub-sector consists mainly of large parastatals engaged in brewing, fruit and vegetable processing and flour and animal feed milling. The building materials sub-sector consists of a few steel processing plants, brick and concrete block manufacturing plants and quarries. The leather goods sub-sector consists of about 1,460 enterprises employing close to 3 000 people (World Bank, 2002).

While the country does not have any commercial oil or natural gas deposits, its downstream oil industry is well-developed with a few international oil companies active in the market. There is a fledgling mining industry in Lesotho, based on known deposits of uranium and diamonds. Electricity is provided by the parastatal utility, Lesotho Electricity Corporation (World Bank, 2002).

Lesotho depends entirely on road and air transport for all its produce. The Lesotho Highland Water Project influenced the development of some tarred roads into the mountainous heartland of the country. A positive result of this is that timely haulage of agricultural inputs and outputs from farm-gate to markets are more easily achievable. A major feature of the transportation system in Lesotho is the high cost of road construction and road maintenance as a result of the mountainous topography of the land. The only railway line in the country is a short stretch of 2 km from Maseru station to the Maseru border post (CIA, 2002).

3.4 TRADE

Lesotho's network of trade preferential agreements has played a crucial role in providing favourable access to world markets. Export orientated companies have access to 28 million consumers in the Southern African Customs Union and 360 million consumers in the European Union. The highly concessionary Generalized System of Preferences gives access to North American, Japanese, Nordic and other developed markets, with preferential access to 18 markets in the Preferential Trade Area in eastern and southern Africa. Other preferential trade agreements have been concluded with the Southern African Development Community, and countries of the Western African Preferential Trade Area (World Bank, 2002).

National efforts to attract more inward investment include double taxation agreements with other countries. The National Assembly recently approved a new double tax agreement with South Africa. Lesotho has also signed a double taxation agreement with the United Kingdom, with an agreement to be effected with Mauritius in the near future. For goods imported into the Common Monetary Area, duty is rebated on a range of articles as well as materials imported for manufacturing or processing (World Bank, 2002).

The Government of Lesotho has mounted an aggressive campaign to attract foreign investments confirming its commitment to a free enterprise economy. This is coupled with an extensive program of guiding local entrepreneurs to establish their own businesses. As a result, many industries have been established not only to serve the local market, but also to tap export opportunities (Lesotho Government, 2002). In the past few years, the Kingdom of Lesotho has achieved considerable progress regarding exports of its products. This is reflected not only in the steady growth of the country's exports, but also in the range and variety of products exported and the number of countries to which Lesotho exports. A number of factors have contributed to this success. Foremost among these is the premium quality of the products exported. This, together with competitive prices, enables Lesotho to carve a respectable niche in the world market (World Bank, 2002). Another advantage, which has served Lesotho's exports well, is its privileged position *vis-à-vis* developed country markets. Under the Lomé Convention, its exports are given duty-free access to the EU market. The Generalized System of Preferences in other developed markets provides a

number of concessions, which make Lesotho exports extremely competitive. In addition, Lesotho has duty-free access to the SACU market and some duty concessions in SADC member states (World Bank, 2002).

Lesotho is also known for its diamond exports. Proven deposits of other minerals and semi-precious stones are continuously being explored and developed for the export market (CIA, 2002).

Wool and mohair exports continue to be substantial. From these, hand-woven tapestries are produced, which have gained acceptance as original works of art. More recently, mohair yarn, hand spun in numerous small businesses throughout the country, has been highly regarded for its warmth and beauty, softness and strength (World Bank, 2002). The traditional skills of weaving, braiding and pottery have also been harnessed to produce exquisite hand-crafted articles such as knitwear, jewellery, basketry and a host of handicraft items. Many of these products demonstrate fine workmanship, which defies comparison to machine-made articles (World Bank, 2002). The expanding manufacturing sector in Lesotho gained wide acceptance for its exports of *inter alia* premium-quality tapestries, wall hangings, mohair, quilts, curtaining, sheepskin, slippers, jackets and hats, leather, garments, pharmaceuticals, footwear, and car seat covers. Many more products are constantly being developed and adapted to meet the tastes and requirements of specific foreign markets (World Bank, 2002).

3.5 POPULATION

According to the CIA's World Fact Book (2002) total population in Lesotho is 2 207 984 with 39% of the population between the ages of 0-14 years (male 433 229; female 427 926), 56.3% between the ages of 15-64 years (male 600 476; female 642 538) and 4.7% are 65 years and above (male 43 691; female 60 094). The population growth rate is 1.33% per annum with an estimated birth rate of 30.72 births/1 000 population for 2002. The average life expectancy of the Lesotho population is 47 years. Lesotho compares well with other developing countries in Africa with 83% of the total population above the age of 15 years able to read and write.

3.6 NATURAL RESOURCES

Production of wool in Lesotho is highly dependable on the natural resources in the country. Understanding of the available natural resources is important for proper evaluation of the real livestock and more specifically wool production potential in the country

3.6.1 Geography, Geology, Geomorphology and Soils

Lesotho is a small, mountainous and very poor country, landlocked and totally surrounded by South Africa, with the Free State Province in the west and north, KwaZulu-Natal in the east and the Eastern Cape in the south. The total surface area is 30 355 square kilometres and more than 80% of the country is 1 800 m above sea level. The highest point in the country is 3 482 meters above sea level with the lowest point 1 388 meter above sea level. The terrain in the country is mostly highlands with plateaus, hills and mountains. Lesotho is classified into four agro-ecological zones, which cut across distinct boundaries. These zones are the lowlands with altitudes below 1 800 m, the foothills with altitudes between 1 800 and 2 000 m and the highlands with altitudes above 2 000 m above sea level (Marake, Mokuku, Majoro and Mokitimi, 1998).

Lesotho has a temperate climate with four distinct seasons. These are spring (August to October), summer (November to January), autumn (February to April) and winter (May to July). Variation in temperature is considerable, with temperatures below zero degrees centigrade in winter, especially in the mountainous areas, and up to 34 degrees centigrade during summer months. Hail and frost occur regularly during summer and winter respectively, causing considerable damage to crops, fruit and gardens. During winter, the cold winds and snow flurries and heavy snow in the highlands often render large areas inaccessible for extended periods of time. The snow and cold weather is also a cause of considerable stock losses during the winter months.

The broadest classification of the land in Lesotho is the division between the lowlands and the mountains based upon geological structure, lithology and gross-topography. The lowlands are the regions, mainly in the west, where sedimentary strata outcrop below the scarp formed by the Clarens Formation. The mountains include the eastern part of the

country, which lies above the Clarens scarp. A geomorphologic unit is part of the land surface, which is homogeneous in terms of morphology and genesis. In Lesotho this also implies a uniform underlying geology and within each geomorphologic unit, a definite set of soils. Particular processes of accelerated erosion, mass wasting and sedimentation further characterise the geomorphology of Lesotho (Marake *et al*, 1998).

3.6.2 Water Resources

The major components of Lesotho's water resources can be summarised according the general characteristics of precipitation, surface water/stream flow and ground water. The overall water output for Lesotho is 159.53 m^3 per second (TAMS, 1996).

Topography influences the precipitation regimes in Lesotho. Rainfall increases with altitude from an average of 450 mm in the lowlands along the south-east and mountain foothills to more than 1 000 mm in the north-eastern parts of the country (Sekoli, 1997). Eighty five percent of the annual precipitation falls between October and April and declines in May, reaching a minimum during the months of June to August. However, during this period, snowfall is frequent in the highlands and occasionally in the lowlands. This spatial and temporal variability makes Lesotho a drought prone environment.

Three major rivers drain the country. The Senqu river and valley is the biggest followed by the Makhaleng and Mohokare river systems. Runoff characteristics of these catchments reflect the physical character of the systems and affect flow regimes in the short and long term. Rainfall determines flow rates. High flows are normally observed during the rainy seasons and low flow rates in the dry season. Factors such as density and stream distributions, overland and channel slope, catchment storage, soils/geology and land use patterns affect and modify the flow regimes and hydrological output (Tšehlo, 1997).

The occurrence of groundwater is determined by aquifer characteristics in the different parts of the country. Aquifers vary spatially and temporally due to the nature and lithology of the different geological formations particularly local fracture, joint patterns, and topography (TAMS, 1996; Tšehlo, 1997).

3.6.3 Ecosystems and Species Diversity

Evidence from palynologic, geomorphologic and pedologic studies indicates that there has been quaternary environmental changes in the Vaal and Orange catchments of the interior (26-28°S) where colder periods with high rainfall alternated with warmer and drier periods (Van Zinderen Bakker and Butzer, 1973). These cycles were associated with changes in biotic communities. These ecological fluctuations are primarily attributed to natural climatic changes over an extended period of time (Schmitz & Rooyani, 1987; Marake, *et al*, 1998).

3.6.4 Vegetation

Historical records indicate that major vegetation changes have taken place in Lesotho. Accounts of early travellers and evidence of surviving vegetation suggest that recent vegetation changes are evident within different ecological zones of Lesotho. The lowlands of Lesotho supported dense grassland with an open woodland and riverside willow thickets along major rivers. In addition, the scarp slopes and sheltered kloofs and hollows in the hills supported dense woodlands with species such *as Podocarpus latifolius, Cussonia spicate, Euclea ramosa, Ocotea bulleta and Aloe capensis* (Killick 1963, Germond 1967, McVean 1977). Valley flats contained tussock grass marshes, reed and Cyperus beds, which formed natural water spreading systems over the flood plains (McVean, 1977). Many marshes, reed and Cyperus beds have disappeared, but places once supported these wetlands are still referred to as *mokhoabong* (wetland) and *mohlakeng* (reed bed). These vegetation types probably extended to some 2,000 metres above sea level to be succeeded by *Montana* scrub (Marake, *et al*, 1998).

The sub-alpine scrub occurred within the sub-alpine belt at elevations above 2,000 metres above sea level. This vegetation type was dominated by *Leucosidea sericea* and *Buddleia salviifolia*, with patches of tall herb meadows in wetter areas and drier grassland on the ridges. The *Buddleia-Leucosidea* scrub was sometimes continuous with shorter *Passerina, Cliffortia, Philippia and Athanasia* scrub mainly on northern slopes, which are drier. This vegetation type has apparently been converted into temperate grassland by fire (Jacot-Guillarmod, 1971; Weiland, 1982).

The alpine belt occurs above the sub-alpine scrub at 2,800 metres above sea level. There have not been any serious changes in vegetation within this zone. The alpine area contained numerous spring bogs, wet herb and sedge meadows. Merxmuellera, Festuca, Pentaschistis and various heaths of Erica and Helichrysum dominated the grassland. Heavy grazing by livestock, construction activities and mining have adversely impacted on the spring bogs (Weiland, 1982).

3.6.5 Fauna

Animal diversity in Lesotho has changed due to factors such as habitat loss, direct slaughter and competition from large numbers of domestic stock on the available rangeland. Earlier accounts suggest that large game such as *blesbok, zebra, wildebeest, eland* and at least five species of antelopes were present in Lesotho (McVean, 1977; Lesenya, 1988). These reports are supported by the observation that many of these species, which are extinct in Lesotho are still abundant in neighbouring parts of southern Africa. Another piece of evidence that supports the aforementioned accounts is derived from names of places such as *Liphiring* (hyenas) in Mohale's Hoek, clans such as *Batloung* (elephants) and commonly used names such as *Tau* (lion), which are given to people. All these names suggest that these animals were once present in Lesotho. At present a few species of large mammals remain in very small numbers in the country and these include mountain antelopes such as grey reebuck *(Pelea capreonus)*, mountain reebuck (*Redunca fulvorufula*), klipspringer (*Oreatragus oreatragus*) and baboons (Lesenya, 1988).

3.6.6 Ecosystems and Habitats

The diversity of vegetation types is commonly used to express ecosystem diversity since vegetation has an impact on the abundance and distribution of animals. Lesotho is generally considered to be a grassland biome with a limited forest cover (Low and Robello, 1996). The grassland biome is subdivided into six grassland types. Table 3.1 presents the vegetation types of Lesotho and their corresponding area coverage. The grassland of Lesotho appears to be deteriorating at an alarming rate due to unsustainable range management practices. Until recently, approximately 359 680 hectares of rangeland has been invaded by Karoo shrub,

Chrysocoma ciliata. This degraded area comprises about 16 percent of the entire rangeland (Lowe and Robelo, 1996).

Table 3.1: Vegetation types, area covered and proportion of conserved areas

Vegetation Type	Synonyms	Area (km^2)	Prop. Con-served (%)	Prop. of Country (%)
Forest biome				
Afromontane Forest	Montane Forest; Knysna Forest; North-eastern Mountain Sourveld; Highland & Dohne Sourveld	1	0	0
Grassland biome				
Highveld grassland types				
Moist Cold Highveld Grassland	Cymbopogon-Themeda Veld Transition; Aristida unciformis-Eragrostis plana Grassland North-eastern Sandy Highveld; Highland Sweet Grassland; Moist Cool Temperate Grassland; Highland Sourveld to Cymbopogon-Themeda Veld Transition	6,689	0	22.63
Moist Cool Highveld Grassland	Cymbopogon-Themeda grassland; Themeda triandra-Eragrostis curvula grassland	198	0	0.67
Wet Cold Highveld Grassland	Rhus dentata-Leucosidea Thicket; High Cold Sourveld	58	3.28	0.2
Mountain grassland types				
Afro Mountain Grassland	Themeda-Festuca Veld; Monocymbium ceresiiforme-Tristachyar á& leucothrix Grassland	15,489	0	52.4
Alti Mountain Grassland	Merxmuallera-Festuca grassland;Themeda-Festuca Alpine veld; Erica-Helichrysum Heath; Erica-Helichrysum-Eumorphia Sedge Heath	7,118	1.08	24.08
Moist Upland Grassland	Hyparrhenia hirta Tall grassland; Highland Sourveld; Dohne Sourveld	3	55.78	0.01
Total Area		**29,558**	**0.27**	**100**

Source: Lowe and Robelo, 1996

3.6.7 Environmentally Sensitive Areas

Mires (bogs and fens) are common in the highlands of Lesotho. These **wetlands** occur where precipitation exceeds potential evapo-transpiration, creating a net surplus of water. Mires

consist of peaty-loam deposits and are commonly found in riverheads. They tend to purify and regulate the flow of water into streams. Mires vary in size, ranging from several square metres to several square kilometres. The vegetation is predominantly made up of mat-forming miniature plants (Osborne and Tigar, 1992). High grazing pressure and trampling by livestock increasingly degrades many wetlands. Road construction in the mountain areas also contributes to wetland degradation.

The climate of the **afro-alpine zone** differs dramatically from that of other ecological zones and it is a key determinant of the unique alpine communities. The Maluti/Drakensberg alpine region contains unique habitats including bogs and fans. The region also has high levels of endemic plants. There is a total of approximately 1 375 species of plants (30 percent endemic), 250 species of birds, 50 species of mammals and 30 species of amphibians and reptiles (Lowe and Robelo, 1996). The afro-alpine area in Lesotho is currently under heavy grazing pressure by domestic livestock. This is particularly evident in bogs, which are rapidly loosing their hydrologic function due to overgrazing and trampling during summer months.

3.6.8 Sustainable Use Areas

Sustainable use areas are those areas available for the sustainable use of the natural ecosystem, but which indirectly conserve biodiversity. These areas are identified according to their usage and are commonly referred to as *maboella*, range management areas, reserves and conservations. The *maboella* regime is a communal system that governs access to rangeland resources to ensure sustainable use of winter grazing areas, thatching grass, reeds and wood resources. This is an indigenous system, which was developed in the late eighteenth century by the Paramount Chief Moshoeshoe I and administered by local chiefs and headmen. This system has collapsed in some areas due to declining traditional authority and an increase in population. In some areas however, the scarcity of resources has actually strengthened the *maboella* regime (Lowe and Robelo, 1996).

Rangeland degradation has reached a critical level due to overgrazing and poor range management practices. Overgrazing has in turn led to progressive replacement of palatable grasses by invader species such as *Chrysocoma ciliata*. Annual soil loss from rangelands is

estimated at 23.4 million tons per year. Frequent droughts also contribute to range degradation (Lowe and Robelo, 1996).

Ex situ conservation is the responsibility of the Government through the Ministry of Agriculture and the National Environment Secretariat (NES). This project is underdeveloped with only a few institutions, NGOs and individuals currently involved in *ex situ* conservation by propagating some plant species of economic importance (Lowe and Robelo, 1996).

3.6.9 Legislation

Only three acts directly address biodiversity conservation; these are the Historical Monuments, Relics, Fauna and Flora Act of 1967, National Parks Act of 1975, and Managed Resource Areas Order of 1993. An umbrella environmental bill that has specific provisions for conservation of biological diversity has been completed to provide the legal framework for new environmental institutions. These regulations mostly focus on the improvement of economic or agricultural benefits rather than direct conservation of flora and ecological processes (Lesotho Government, 2002).

3.6.10 Monitoring

The Lesotho Highlands Development Authority (LHDA) is engaged in flora and fauna monitoring programs within the Malibamatšo catchment (Phase 1A) and the Mohale catchment (Phase 1B) area. However, no national monitoring framework of biological diversity is present (Lesotho Government, 2002).

3.7 AGRICULTURE

The macroeconomic importance of Lesotho's agricultural sector is evidenced by the fact that 80% of the population resides in rural areas where more than 50% derive their livelihood from crop and livestock production. About 60% of the country's labour force is employed by the agricultural sector. Agriculture's share in GDP fell from 26.8% in 1981 to 16.3% in 2001 (Table 3.2) (World Bank, 2002).

Table 3.2: Percentage GDP contribution per sector (1981 – 2001)

Sector	% of GDP			
	1981	1991	2000	2001
Agriculture	26.8	17.0	16.9	16.3
Industry	24.6	29.5	39.9	42.0
Manufacturing	9.1	14.1	16.0	16.8
Services	48.6	53.4	43.2	41.7
Private consumption	139.2	134.4	107.4	97.2
General government consumption	20.9	15.5	18.3	16.6
Imports of goods and services	117.0	129.8	87.0	91.5

Source: World Bank, 2002.

Since 2000, average annual growth in the agricultural sector has declined to -1.9% and -1.6% respectively for the years 2000 and 2001 (Table 3.3). The declining trend in agriculture is of concern and it can be attributed towards the declining productivity due to soil erosion, lack of proper plant fertilization, poor husbandry practices, poor land preparation, inadequate weeding, untimely planting, late harvesting and other sub-optimal management practices (ADF, 1998). Inadequate credit and shortcomings in policy frameworks also contributed toward a decline in crop yields.

Table 3.3: Average annual growth per sector (1981 – 2001)

Sector	Average annual % growth			
	1981-91	1991-01	2000	2001
Agriculture	2.9	2.7	-1.9	-1.6
Industry	5.0	7.5	16.8	7.9
Manufacturing	8.4	5.8	4.1	7.0
Services	6.0	2.7	-1.2	-0.7
Private consumption	3.1	0.0	-8.0	4.0
General government consumption	3.2	5.6	0.8	-3.1
Gross domestic investment	7.8	-1.4	-3.6	-20.9
Imports of goods and services	3.8	0.4	2.7	4.5

Source: World Bank, 2002

3.7.1 Land Tenure

In Lesotho land belongs to the Basotho nation and the King holds it in trust for the people. The land is administered by chiefs and headmen who manage the land on behalf of the King. The underlying concept of the customary land tenure system is that land is a national and

social asset to be utilised for the benefit of the nation. The system entitles all households to have access to land for residential and agricultural purposes.

To be allocated land, an applicant has to be a married male Mosotho and accept the superior and overall authority of the King. To be allocated a residential site, an applicant must show good behaviour and loyalty to the chief. To be allocated agricultural land, the applicant must have a prior residential allocation. This is important because without a residence there can be no claim to arable land, grazing, reeds or thatching grass. Once land is allocated, the recipient has certain rights to use the land in his lifetime. Cultivation of arable land is one of the requirements for retaining use of the land. If someone who has been allocated land either fails to cultivate fields for two successive years or cultivates fields improperly, the chief may reallocate the land. Furthermore, individuals with more land than required for their subsistence needs might be deprived of the surplus land. Both these are, however, uncommon in practice (Ministry of Agriculture, 1990).

Every married male has the right to be allocated a portion of arable land to provide for his subsistence and that of his dependants. In the past, households were allocated three fields, which, in most cases, were situated in different locations around the village. Fragmentation of fields originated in the traditional doctrine of equity and the realisation that the risk of total crop loss from natural disasters could be reduced (Williams, 1972). Fragmentation also meant that a household's fields were located on good as well as poor soils. The other explanation for the allocation of three fields is that the first field was for paying tax, the second for the home and the third for the children (LASA, 1978). In polygamous households the man or the head of the household was allocated three fields with two additional fields for each wife. Another explanation is that the practice was designed to ensure that all community members had an equitable distribution of fields in terms of the distance from the homestead.

A landholder's rights to arable land are seasonal. When the land is cultivated the owner has exclusive rights to that land. After the crop has been harvested the land becomes open access whereby anybody can exercise secondary rights of grazing animals. This practice is called *Mohoang* and it means that community livestock sequentially grazing stover from one field to the next. In addition anybody can collect the stover for fuel, wild vegetables, dung for fuel and plastering etc. The practice of *Mohoang*, is however, becoming less prevalent. It is more

common today for landowners to cut the maize or sorghum stalks for their private use or to exclusively graze the stover *in situ*.

The mountain rangeland is divided into 22 ward areas controlled by Lesotho's 22 principal or ward chiefs. A household wishing to establish a permanent cattle post applies to the principal chief for an access permit into the highland cattle post. Access to highland rangeland entitles the stockholder to graze anywhere in the rangeland held by the principal chief. However, access to highland pasture does not entitle someone to prevent entry by others. Once a cattle post is established, feasible livestock walking distances and managerial expedience determines the size of the area available to the stockholder (Ministry of Agriculture, 1990).

Lesotho's villages were initially developed on areas comprising cropland, woodlands, grasslands, and a supply of fresh drinking water within walking distance. The purpose of village grazing land was to complement agriculture by providing agricultural land through land conversions as well as providing forage for draft animals. Unlike the cattle post regime, no formal permission is required for pasturing livestock. The only requirement is ownership of livestock and residency in the village controlling the pasture. The grazing area is managed through a system called *leboella*. This is a rotational system in which the chief divides the grazing area into parcels. At any one time, only one parcel is open for grazing while the remaining parcels are allowed to recover (Ministry of Agriculture, 1990).

The 1979 Land Act was introduced to address the land tenure system in the country. This Act introduces the leasehold system of land tenure. The major purpose of the Act is to promote agricultural production through equitable distribution to households interested in increasing agricultural output. The Act provides for the establishment of Selected Agricultural Areas (SAAs), which are designated by Government for agricultural development purposes. The traditional laws and practices relating to land use and tenure have prevailed to this day, despite the enactment of the 1979 Land Act, which has remained largely unimplemented (Ministry of Agriculture, 1990).

3.7.2 Crop Production

The major crops grown in Lesotho are maize, wheat, sorghum, beans and peas. Grains are the most important crops in terms of area allocated to crop production. The average area allocated to grain production was 75 percent of the total arable land in the country during the 1980's (Bureau of Statistics, 1994). Most crops are grown during summer. Wheat and peas are grown in summer and winter. Winter wheat and peas are grown in the lowlands while summer wheat and peas are grown in the mountains. Crop production is characterised by a high proportion of subsistence farming, with over 70 percent being consumed and not marketed (Lesotho Government, 2002).

Lesotho's crop agriculture has experienced continuous declines since 1978/79. The causes of the declining crop production include drought, low yields, low fertiliser application rates, low and erratic rainfall, hail, frost, and soil erosion (Dept. of Agriculture, 2002). Lesotho is increasingly relying on imports as a result of the low and declining crop production. The imports are mainly from South Africa (Dept of Trade and Industry, 2002).

Even though population pressure on arable land is increasing a large proportion of arable land is left fallow each year. Even with an increasing demand for arable land, land under cultivation declined from 450,000 ha in 1960 to 310,000 ha in 1988 (Bureau of Statistics, 1990; Ministry of Agriculture, 1990).

3.7.3 Livestock Production

Lesotho's livestock sector consists of cattle, sheep, goats, horses, donkeys, pigs and poultry. Livestock are kept for both economic and social reasons. Cattle are mostly raised for subsistence use, including draught power, milk, fuel (dung) and meat. Cattle are also kept for socio-cultural uses such as *bohali* (bride-wealth) and ceremonies. The sheep are of the merino type and are raised for the sale of their wool, slaughtering as well as for ceremonial purposes. Most goats are of the Angora type and are raised for the sale of mohair and ceremonial purposes. Horses and donkeys mostly serve transportation functions in the remote rugged interior of the country. Donkeys are used for transporting goods while horses are used for human transportation. The largest single monetary contribution to cash income from

livestock is that provided by sales of wool and mohair. Wool and mohair are also the major agricultural export products from Lesotho (Ministry of Agriculture, 1990; Lesotho Government, 2002).

The livestock sub-sector is dominated by smallholders with the average number of cattle, sheep and goats per household being 3, 43, and 25, respectively (Mochebelele and Mokitimi, 1992). Approximately 8 percent of the households own half of the country's livestock. This figure might be slightly higher because of the practice of *mafisa. Mafisa* is a system of livestock borrowing and lending which generally gives the holder of the animals rights to wool, mohair, milk and draught power while the owner retains title to the inventory and progeny.

3.7.4 Range Utilisation and Management

About 80 percent of Lesotho's land area may be regarded as rangeland. Communities enjoy usefructuary rights. Although rangelands in Lesotho are an open-access resource, communities have defined territorial boundaries where they can graze their animals. The Lesotho livestock grazing system is characterised by the practice where livestock are moved to the cattle posts in the mountains in summer and then moved to the lowlands in winter. In the mountains, livestock are moved to lower areas or valleys in winter. The seasonal movement of livestock from the lowlands to the mountains is becoming one of the major causes of overstocking (Ministry of Agriculture, 1990).

Chiefs are responsible for administering range utilisation. Village chiefs are responsible for village grazing areas and principal chiefs are responsible for cattle post grazing areas. Chiefs are also responsible for the administration of *maboella.* The system of *maboella* involves reserving certain parts of village rangelands for the rejuvenation of grass, protection of thatching grass, reed beds, tree planting, and rotational grazing. *Maboella* is practised in most cases during the summer months. The main purpose of *maboella* is to reserve areas of thatching grass and croplands from grazing during the summer months. The grasses may not be grazed until they have been cut in July or August. *Maboella* is usually declared as soon as crops and thatching grasses have attained sufficient growth to attract animals. The opening of *maboella* is generally when harvesting is completed.

The Laws of Lerotholi (Melao ea Lerotholi, 1989) explicitly point out that grazing permits are required for cattle post areas. The purpose of grazing permits is to monitor the movements of livestock to cattle posts and thus make it possible to graze each particular area in accordance with its carrying capacity. Grazing permits are issued by, or on behalf of the principal chiefs and specify the number of animals, which may be moved to a cattle post, the permitted location of grazing within a dip tank area, and the number of animals which may be grazed.

In recent times the government has introduced Village Development Councils (VDC) with one of their responsibilities being the management of rangelands. Chiefs who see this as a way of encroaching on their powers have opposed this move. This has resulted in conflicts over the management of rangelands.

One of the major environmental problems facing Lesotho is overgrazing caused by overstocking. Estimates of overstocking range between 50 and 300 percent in different areas (Ministry of Agriculture, 1990). The various measures undertaken in Lesotho are designed to control livestock numbers according to the carrying capacities of the different veld types. The approach to range management is based on the range succession model. The succession model uses stocking rates as the main management tool.

The government of Lesotho has intervened in the administration of rangelands through legislation. The Land Husbandry Act 1969 empowers the Minister of Agriculture to institute regulations to ensure proper conservation and management of agricultural land. A series of range management and grazing control regulations were introduced to support this Act. These include grazing control and pasture management regulations of 1973 and grazing control and management regulations of 1977. The grazing control regulations of 1980 follow these two regulations (Dobb, 1985). The 1980 regulations were amended in 1986 by introducing stiffer penalties for range encroachment (Ministry of Agriculture, 1990).

Grazing associations were introduced after the Government and some donor organisations felt that the chieftaincy became incapable of managing the rangelands effectively. Each of these grazing associations operates in specific Range Management Areas (RMA). It was envisaged that efficient management of the RMAs would be possible if livestock owners take

responsibility because of their vested interests in the rangelands. The first RMA was established in 1978 and since that time several RMAs have been established.

The Government of Lesotho has also tried to control the importation of livestock through import taxes. Livestock import taxes were introduced in 1984 as a means of controlling the importation of animals. In the 1970s wages in the RSA mines increased significantly and Basotho miners invested most of their earnings in cattle that they purchased in South Africa. Cattle imports increased by 1 400 percent between 1976 and 1980, but reduced significantly after 1984 as a result of the amendment of the Agricultural Marketing (Livestock Import Fees) regulations. This regulation stipulated the payment of import fees. Government also introduced the livestock exchange and small stock culling program. The livestock exchange program involves the exchange of ewes for ewes for breeding purposes. According to this program a farmer is given two pure-bred ewes in exchange for three unimproved ewes. The program was financed through the EU-supported Stabex program. The small stock culling program involves the removal of coloured, and old and unproductive sheep and goats from the range. Government has also attempted to introduce grazing fees in order to reduce livestock numbers. However, this has never been implemented (Ministry of Agriculture, 1990).

3.8 GOVERNMENT INSTITUTIONS DEALING WITH AGRICULTURE

The government services in Lesotho are well-structured with clear mandates from their political leaders. The ministries dealing with the wool sector in Lesotho is Agriculture and Industry, Trade, and Marketing. These departments deals directly with farmers and other role players in the wool industry and could therefore have a direct influence on the wool industry.

3.8.1 Ministry of Agriculture (MOA)

The Ministry of Agriculture has seven departments: Crops, Field Services, Livestock Services, Cooperatives, Soil Conservation, Forestry and Land Use, Economics and Marketing and Administration. Staff from each of these departments are assigned to different districts and the MOA formulates and implements agricultural policies and programs through the different departments.

An important section within the MOA supporting the wool industry is specialised services. The role of specialised services is to provide professional and technical backup support to district agricultural offices for the purpose of enhancing their capacity to promote agricultural development in the districts. A third section within the Ministry is the district agricultural offices who deals directly with the wool producers. The role of the district agricultural office is to mobilise resources and coordinate their utilisation to provide efficient and effective support services to farming and other related communities in order to foster sustainable agricultural development at district level.

The agricultural extension service consists of about 400 field personnel made up of crop extension agents, livestock and nutrition specialists, cooperative assistants and conservation specialists, supported by 280 subject matter specialists. The field staff corps supports an estimated 300,000 households in the ten districts of Lesotho. Although extension has been decentralised to district level, it still appears that staff is managed centrally from Maseru through the different departments of MOA. Agricultural information to producers is provided mainly through radio and personal contacts between extension staff and producers as well as various group actions such as farmer's days. Five farmer training centres exits in the country through which farmer extension training is channelled but reports indicate the ineffectiveness of this system (Tsoanamatsie, 2003; Tuoanie, 2003).

The research section of the MOA is the National Agricultural Research System (NARS). The main component of the NARS is the agricultural Research Division (ARD), which is mandated to implement the MOA's agricultural research objectives. ARD generates, adapts and transfers agricultural technologies and scientific knowledge and provides relevant services for both subsistence and commercial farmers and other stakeholders for the sustainable development of agriculture. The research objectives of ARD are in accordance with national agricultural policies and strategies, which *inter alia* stipulate the importance of preserving the country's natural resource base. The mandate of ARD covers livestock, crops, natural resources and other related topics (Lesotho Government, 2002).

Some of the MOA departments conduct on-farm adaptive trials under donor-funded development projects, whereas some of the externally funded development projects in agriculture have small-scale adaptive research components. The Faculty of Agriculture at the

National University of Lesotho also conducts limited research besides teaching courses in agriculture. NGOs and South African private companies are also involved in especially variety testing and seed producing research activities.

3.8.2 Ministry of Industry, Trade and Marketing (MITM)

The Ministry of Industry, Trade and Marketing (MITM) is directly involved with the marketing and trade of wool and mohair through the Livestock Products Marketing Services (LPMS) which was transferred from the MOA to the MITM during 1999.

The Ministry support the wool industry by committing itself to:

- Formulating and monitoring the implementation of appropriate commercial, marketing and industrial development policies and enforcing supporting legislation;
- establishing institutional frameworks which promote foreign direct investment and domestic participation in terms of country's commercial, marketing and industrial activities;
- fostering the global competitiveness of Lesotho's economy based on comparative advantage;
- creating a conducive environment for attracting foreign investment from South Africa and other foreign sources outside the sub-region;
- facilitating the development of capacity among local entrepreneurs to increasingly participate in the country's commercial and industrial development program;
- increasing Lesotho's competitive participation in the sub-region's development process;
- enhancing Lesotho's competitiveness in the global export market;
- providing a market policy environment that encourages private sector participation; and
- diversifying output according to the country's comparative advantage and facilitating the development of efficient input and output marketing system.

3.9 COMPLIANCE TO INTERNATIONAL ENVIRONMENTAL STANDARDS IN LESOTHO

Physical resources and their spatial planning is an equally important component of the player/environment relationship after human resources, external relations and markets. An area's environment not only concerns its inhabitants but also society in general. Society expresses certain expectations of its environment in terms of markets and formal requirements that constitute key levers upon which the players can base their area's development (Khan, 2003).

Consumers determine standards at market level according their needs for quality and environmental specifications. Other explicit forms of standards are also enforced by regional, national and international environmental protection rules and laws. Civic organizations, lobbying groups and other environmental protection groups also exert pressure on industries and governments to ensure and implement environmental friendly practices. Rural areas and industries are therefore subject to interventions from national and international environmental organizations. Lesotho as a small developing country is also subjected to these environmental standards. The wool and mohair industry as a major earner of foreign capital should therefore subscribe and adhere to these international environmental standards for continuous competitiveness. The following section is a summary of the environmental policy of the Lesotho government.

3.9.1 International Environment Conventions and Obligations

In order to ensure effective implementation of international treaties and conventions to which Lesotho has acceded and will accede in the future, national laws consistent with those treaties were promulgated. Legislative actions are taken to implement treaties and conventions already ratified by Lesotho (NEAP, 2001). Lesotho continues to participate actively, regionally and internationally, in the development and codification of international environmental laws, instruments and guidelines, and facilitate their adoption and inclusion in national laws and procedures.

The integration of trade and sustainable development is an explicitly stated goal in multilateral and bilateral trade agreements. It also governs inter-firm commercial policies. In

the trade sphere, sustainable development is defined by mandatory technical regulations and voluntary standards, where law drives the former and consumer preferences the latter. The Agreements on Technical Barriers to Trade (TBT) and on the Application of Sanitary and Phytosanitary Measures (SPS) contain provisions for harmonizing these standards globally. The ISO series, SA standards, and the Forest and Marine Stewardship Council standards represent attempts at harmonization by international voluntary bodies (Khan, 2003).

Developing countries such as Lesotho are facing with specific challenges regarding harmonization. Kahn, (2003) stated the following: "*While harmonization is key to reducing protectionism – the downside of environmental, social and quality standards - developing countries are not sufficiently empowered in terms of their institutional, technical and information processing capabilities to contribute to and comply with proliferating standards. Voluntary standards, in particular, are increasing at an almost exponential rate. As a result, they are often caught unawares by non-tariff barriers, which may not be malafide in intent but, invariably, generate adverse political resonances.*"

Developing countries therefore face two options. The first and preferred option is for developing countries to become proactive in standards setting processes so that their concerns and priorities can be reflected in these standards. This however requires that that the country develops the required capacity to do so. If not, they should empower themselves. The recognition in this regard therefore is then that they should do so in a "standards taking" rather than "standards making" mode (Kahn, 2003). This entails appropriate firm-level and institutional/policy responses. National regulatory processes, standards setting and information access, conformity assessment and accreditation are some of the areas where multi-tiered capacities need to come up to speed. The introduction of the Lesotho National Environmental Policy (NEAP) put Lesotho in the forefront amongst many other developing countries.

3.9.2 Lesotho National Environmental Policy (NEAP)

The mandate on environment is derived from the constitution of Lesotho, Section 36 which states: *"Lesotho shall adopt policies designed to protect and enhance the natural and cultural environment of Lesotho for the benefit of both present and future generations and shall endeavour to assure all citizens a sound and safe environment adequate for their health and well-being."* (Lesotho Government, 2003). The National Environmental Plan (NEAP) for Lesotho was formulated in 1989. The NEAP provides for increased awareness of environmental concerns in sectoral planning and programming. The National Action Plan (NAP) was launched in May 1994 to incorporate sectoral priorities and national plans for the implementation of international conventions on Biodiversity, Climate Change and Desertification Control (Lesotho Government, 2003).

The Lesotho Government realizes the importance of these endeavours and set up a body responsible for coordinating environmental matters nationwide. They also put in place an enabling legal framework to facilitate the whole process. The principle challenges on environmental protection identified in Lesotho were (Lesotho National Environmental Policy, 2001):

- Accelerated soil erosion that resulted in land degradation;
- loss of arable land and eventual desertification;
- periodic prolonged drought and scarcity of water for agriculture, human and livestock consumption;
- increasing urban and rural poverty;
- pollution of land and water courses;
- low level of environmental awareness among policy and decision makers, and the general public;
- low level of institutional capacity to deal with environmental problems;
- lack of public participation in project identification, design and implementation;
- some legal impediments in the way of women's social and economic progress; and

- absence of environmental policy and enabling legal mechanism to embark on sustainable development programmes.

The Government of Lesotho endorses and adheres to internationally accepted principles of the 1972 Stockholm Declaration and the 1992 Rio Declaration as adopted by the United Nations Conferences. It is also a signatory to the following international environmental conventions (Lesotho National Environmental Policy, 2001):

- Convention on the Protection of Fauna and Flora;
- Convention on Fishing and Conservation of the Living Resources of the High Seas;
- Convention on Climate Change;
- Convention on Biological Diversity; and
- Montreal Protocol for the Protection of the Ozone Layer.

The Government of Lesotho further endorses and adheres to regionally accepted principles contained in the Southern Africa Development Community (SADC) Policy and Strategy for Environment and Sustainable Development, and the African Ministerial Conference on Environment (AMCEN), and other similar programmes (Lesotho National Environmental Policy, 2001). The objectives of the National Environment policy address a broad range of environmental problems in Lesotho. The overall goal of the national policy on environment is to achieve sustainable livelihoods and development for Lesotho. The objectives of the NEAP is the following (NEAP,2001):

- To secure for all Basotho a high quality of environment to enhance their health and well-being;
- to raise public awareness and promote understanding of essential causal linkages between development and environment, and to ensure that environmental awareness is treated as an integral part of education at all levels;
- to use and conserve the environment and natural resources for the benefit of present and future generations, taking into account the rate of population growth and productivity of the available resources;

- to conserve the Basotho cultural heritage and utilise it for the benefit of the present and future generations;
- to encourage and facilitate individual, NGO, community, religious organizations, and business community participation in environmental management;
- to halt environmental degradation, and to restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere and to preserve biological diversity;
- to implement the principle of optimum sustainable yield in the use of natural resources and ecosystems;
- to foster community management and revenue sharing from sustainable utilization of natural resources on customary and public land;
- to put in place comprehensive environmental regulatory measures to stimulate sustainable economic and social development;
- to set up comprehensive programmes of resource inventorying and accounting, complemented by regular and accurate environmental assessment, monitoring, and dissemination of information to all sectors of society;
- to ensure that the true and total costs of environmental use and abuse are borne by the user, i.e. the "polluter pays" principle;
- to enact and implement a land tenure policy which enhances sustainable natural resource management;
- to empower women to play a key role in natural resource use and management activities; and
- to cooperate in good faith with other countries in the Southern Africa Development Community (SADC) region, in Africa, and with international organizations and agencies to achieve optimal use of trans-boundary shared natural resources and effective prevention or abatement of trans-boundary environmental impacts;

The effective implementation of the NEAP is based on the understanding that environmental issues are products of many interrelated and interlocking factors, which requires holistic and systemic views and actions. The basic principles and strategies have been categorized as

Social and Economic Dimensions, Sustainable Management of Natural Resources and Getting People involved (NEAP, 2001). The Lesotho Government endeavours to put policy into practice by means of several institutional and legal arrangements.

The NEAP is a very thorough and detailed plan with many implementation challenges. Lesotho is at the forefront amongst other developing countries with regard to environmental policies but implementation of all of these policies seems to be lacking.

3.10 POLICIES AND PROJECTS IMPACTING DIRECTLY ON THE WOOL PRODUCTION SYSTEM

Until recently, attempts to implement a concerted environmental program for Lesotho have not been successful. In part, environmental matters cut across various sections of the national economy, sometimes falling under different ministries within the government. Nevertheless, various environmental initiatives have been undertaken with varying degrees of success. These programs were started mainly to overcome specific land use problems, and have not given consideration to the wider environmental issues of population, resources and their interaction at the national and local levels. So far, three plans have been developed to address cross-sectoral environmental problems: The National Livestock Policy; The National Conservation Plan; and The National Environmental Action Plan (Lesotho Government, 2002). A brief description of these plans is provided below, followed by discussion of four projects aimed at specific geographical areas and their problems.

3.10.1 National Livestock Policy Implementation Plan

This plan emerged following approval of the National Livestock Policy by Government in 1987. The goal of the plan is to address livestock overgrazing problems and initiate a long-term effort to reduce livestock numbers to carrying capacity equilibrium. The aim of this plan was to reduce overgrazing from 50% in 1990 to 40% by 1994. Other targets include removal of specific numbers of livestock through a combination of livestock culling, animal exchange, livestock marketing, and introduction of national grazing fees. A grazing fee implementation plan was prepared in 1991 but this plan met resistance amongst stockowners and was never implemented.

3.10.2 National Conservation Plan

The Ministry of Agriculture developed this plan in 1988. The plan discusses rates of soil erosion in various landforms and land use areas as well as actions needed to address these challenges. The plan highlights the measures and resources required to tackle the conservation problems of the country, dividing these among national five-year plans and district conservation plans. Progress in implementing the plan components has been slow and is constrained by a number of financial, technical, organisational and social problems.

3.10.3 Land Management and Conservation Project

The objective of this project is to improve land management, halt resource deterioration and thereby improve productivity. To achieve this long-term objective, the project aims to strengthen the Ministry of Interior, Chieftainship Affairs and Rural Development (MICARD) through technical assistance, training and logistical support. The project also finances land management sub-projects at the village level, which include pasture improvement, conservation, tree planting, and small-scale community development activities. Of the seven districts planned for implementation, only two (Mokhotlong and Qacha's Nek) originally received support. The idea was to start with only two districts to enable project staff to develop and test techniques and working models before expanding to cover larger areas. The total cost of the project was estimated at US$20.2 million over a nine-year period. Eighty percent of the cost was provided by the International Development Association (IDA) and the remaining 20% by the government of Lesotho (Lesotho Government, 2001).

3.10.4 Soil and Water Conservation in Southern Lesotho (SOWACO)

This project, funded by the government of the Netherlands, was implemented by FAO. The overall objective of the project was to increase the capacity of rural Basotho in the southern district of Mohale's Hoek to conserve soil and water, thereby increasing their incomes. The total allocated budget for the project was US$1.3 million, with almost 90% covered by the donor and the remaining 10% by the government of Lesotho (Lesotho Government, 2001).

3.10.5 Farm Improvement with Soil Conservation (FISC).

Funded by the Swedish Aid Agency (SIDA), the main objective of this project was to foster self-sustaining communities capable of carrying out economic land husbandry programs, with self-sufficiency in conventional land conservation techniques and resources. The strategy to achieve this objective includes increasing public awareness of environmental problems, training government staff and villagers, preparing resource inventories, identifying erosion problems, and implementing conservation works on both private and communal lands.

3.10.6 Matelile Rural Development Project

This project is funded by the German Government (GTZ) and cost 8 million Maluti. The goal of the project is to improve the living conditions of the population in the Matelile area through intensified use and diversification of the existing production potential. The target groups of the project are subsistence farmers with average farm holdings of two hectares, and medium scale subsistence farmers with average farm holdings of around three hectares and a larger number of livestock (Lesotho Government, 2001).

3.10.7 Rangeland Improvement and De-Stocking Initiatives

Attempts to restore the quality of rangeland include management measures and arrangements as discussed above as well as destocking initiatives. The national stock numbers exceeds the carrying capacity of the rangelands. Restoration is only possible if different strategies are applied in tandem. Destocking alone or utilisation arrangements alone will not be sufficient to restore rangeland quality. The Ministry of Agriculture, through its Department of Livestock Services, has introduced a number of destocking programs. The National Livestock Policy Implementation Plan contains three main elements developed with the aim of restoring rangeland. These elements are the implementation of grazing fees, measures focusing on the genetic improvement of livestock, and measures to improve rangeland management as already discussed above (Tsoanamatsie, 2003).

3.10.8 Other Destocking and Livestock Development Strategies

De-stocking Lesotho's rangelands to acceptable limits requires long term commitment from government and producers alike, since there are numerous variables to be taken into account, some of which are beyond the immediate control of the government. Livestock practices current in rural areas took years and generations to develop, and therefore it should not be expected that these social and economic systems would change over a short period of time. What is important, however, is that policies and programs should be in place to influence the direction of change and to set the stage for comprehensive future interventions. The government's commitment to achieving sufficient de-stocking of the rangelands is demonstrated by the numerous programs it has developed with this aim in mind.

3.10.9 Promotion of Agricultural Mechanization

The large number of large livestock currently used as draft animals has a negative impact on rangelands, and it is unlikely that farmers will reduce the number of draft animals in the absence of other feasible sources of farm power. It is therefore proposed that farmers in the lowlands of the country are encouraged to use agricultural machinery.

3.11 WOOL ORGANISATIONS

The wool industry in the world and in southern Africa is very well organized with international, national and local organizations looking after the interest of wool farmers and the wool industry.

3.11.1 International Wool Secretariat (IMS), now the Wool Mark Company

The International Wool Secretariat previously represented all wool producing countries in the world but southern Africa (South Africa and Lesotho) suspended its membership during 1997 (Cape Wools, 2000). The main international wool organization is the newly formed Wool Mark Company (WMC) which is now fully subsidised and owned by the Australian wool industry.

3.11.2 Wool Organisations in Southern Africa

The wool industry in southern Africa is very well organised with the most influential organisations the Wool Forum, Cape Wools SA and the National Wool Growers Association (NWGA) – all of them are located within South Africa but they provide critical services to the Lesotho wool industry. Very good relations exist between the South African organisations and the Lesotho Wool and Mohair Growers Association.

Cape Wools SA is a non-profit company established and owned by wool farmers and other industry groups who are registered with the **Wool Forum**, the official policy-making body of the industry. The Board of Directors proportionately represents these groups and is elected from the Forum. Cape Wools SA is committed to the sustained profitability of the southern African wool industry. Cape Wools SA is also the generic name for all South African wools (Cape Wools, 2001). Cape Wools is the executive arm of the Wool Forum and commenced its activities on 1 September 1997. It is a non-profit company established and owned by wool farmers and other directly affected industry groups registered with the Wool Forum, the official policy making body of the industry in South Africa. The Board of Directors represents these groups proportionately and members are elected from the Forum.

The company has been granted statutory authority in South Africa by its Minister of Agriculture and Land Affairs with regard to the collection of statistics (records and returns) for the wool industry (including Lesotho), which enables it to create a wool statistics data bank. This data is used for the creation of national market indicators and other information regarding the industry locally as well as internationally.

The mission of Cape Wools is commitment towards the sustained profitability of the South African wool industry. In their efforts to pursue that, their service portfolio comprises market information and statistics, wool textile research and development, wool production research and technology transfer and promotion.

The focus of the **National Wool Growers' Association of South Africa (NWGA)** is the wool farmer and his interests and this organisation was founded during a Wool Conference in Middelburg on 26 May 1926 when delegates from 19 wool growers' Associations formally

accepted the constitution and rules. Since then the NWGA has developed into a countrywide organisation, consisting of six area branches and more than 600 sub-branches, and boasts a voluntary membership of approximately 7 500 wool farmers. Although Lesotho wool farmers do not officially belong to the NWGA as individual members, the **National Wool and Mohair Organisation** in Lesotho obtained observer status at the National Congress. They are annually invited to the National NWGA Congress.

The goal of the NWGA is to increase the profitability of wool sheep farming in southern Africa. An integrated producer-need approach is followed in developing and maintaining sustainable production systems. Existing and ongoing producer-driven research activities support this. A successful shearer-training program also forms part of producer services. The NWGA, together with other industry role-players, provides the latest information on producer-driven research and a range of known management practices to increase profitability of the wool sheep enterprise. Pasture and feed management information together with animal health and sheep breeding practices are made available. An on-line service to determine the dry matter production for various climatic regions and pasture systems together with the dry matter requirements for different flock structures is envisaged and most of these services are available to the Lesotho wool industry.

The official producer organization representing the wool farmers in Lesotho is the **Lesotho Wool and Mohair Growers Association.** The main purpose of this organization coincides with the NWGA but lack of sufficient funding and active participation from its members prohibit the functioning of this organization.

3.12 CONCLUSION

Lesotho is a small country, landlocked by South Africa, totally dependent and nearly totally integrated with the South African economy. It is a poor country with few natural resources apart from an abundance of water and scenery. The land as a natural resource has been deteriorated due to unsustainable agricultural and spatial practices that it is impossible to improve the intrinsic potential to its original state. Lesotho is a typical under-developed country with many challenges regarding its human capacity building, institutional arrangements, capital needs, sustainable land use practices, profitability of commodity

systems, etc. Policies to regulate and direct the economic development process is also subjected to international influence from donor organizations and countries and change with regular intervals. Finding the right policies for its specific challenges is therefore one of the main challenges for the Lesotho government.

Evaluation of any commodity system is subjected to the country-specific potential to sustain a specific system. The natural resources needed for the sustenance of agricultural systems is to a large extend available in Lesotho. The wool system depends heavily on the rangelands of the country for grazing but the deterioration of the rangelands impact negatively on the optimal potential of the wool system. Many arrangements and regulations to control and improve utilization practices have failed in the past and it seems that present arrangements are also insufficient to address this problem. Land tenure arrangements are not conducive to sustainable land use since individuals do not have property rights.

Agriculture in Lesotho is mainly subsistence and production efficiency of most commodities is far below international standards. The agricultural sector is reasonably well supported by government institutions. Several regulations and policy incentives attend to the agricultural sector and endeavor to increase the competitiveness of the agricultural industry. The Lesotho government is also a signatory to several international standards and agreements to protect the environment and to control and regulate agricultural production.

Considering all the above mentioned facts in this chapter, one can conclude that, although poor and underdeveloped, potential still exists for Lesotho to dispose of its status as a poverty-stricken, under-developed country. The wool system can play an important role in the development of the rural areas and it should be nourished in symbioses with the natural and economic environment. The people of Lesotho though, are the one's that can make this happen. The next chapter will have an in-depth look at the production of wool in Lesotho.

CHAPTER 4

PRODUCTION OF WOOL IN LESOTHO

4.1 INTRODUCTION

Wool is Lesotho's major export product, earning valuable foreign exchange for the country. During the 2002/2003 season higher wool prices resulted in improved income for farmers. However, a decline in production, both laterally and vertically, is of great concern for the Lesotho government and other role players in the industry (Tsoanamatsie, 2003; Moteane, 2003). Sheep numbers declined from 1 280 975 in 1984 to 1 116 629 in 2001. Yield per animal also declined from 4.37 kg wool per animal in 1946-1950 to 2.07 kg for the period 1996 to 2002 (BOS, 2002).

The wool industry in Lesotho can be categorised in two distinct systems; the shearing shed and the non-shearing shed systems. The shearing shed system market its wool through the government supported shearing sheds whereas the non-shearing shed system makes use of traders and other informal systems to market their wool. Both systems consist of a production and trade/marketing activity. An analysis of the wool industry would therefore focus on both these activities. This chapter deals with the issues related to the production activity. An analysis of the production activity clearly shows the impact and interrelation of multiple factors on the wool production system.

A problem conceptualisation diagram (problem tree) has been constructed to dissect the wool production system. The conceptualisation diagram is used to identify the causal factors for the decline in production and profitability of the wool production system.

4.2 PROBLEM CONCEPTUALISATION OF THE PRODUCTION ACTIVITY

The most obvious production constraints as indicated in the problem conceptualisation diagram, are the lack of proper feeding, disease control, animal reproduction and stock theft. Other factors such as the degrading of rangelands and human intrusion in rural areas also

contribute towards lower production. The specific problems noted are explained in Figures 4.1 and 4.2.

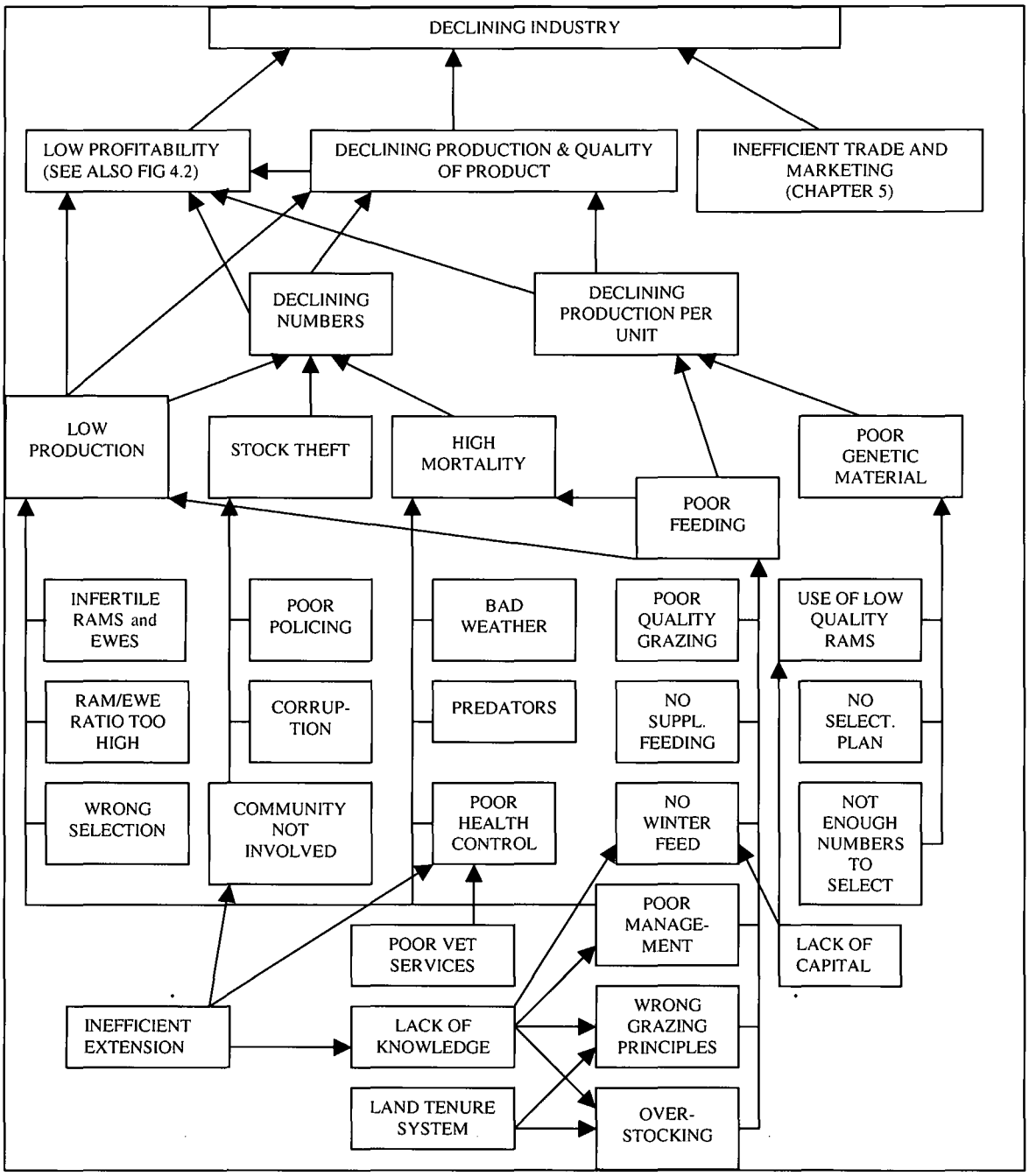

Figure 4.1: Problem conceptualisation, unpacking the possible reasons for the declining wool industry in Lesotho

These diagrams disclose most of the problems and their interrelationships encountered in the production of wool. It became apparent in the problem conceptualisation model that the lack of sufficient feeding and stock management are two of the major causes of low production.

Figure 4.2 also shows that the lack of sufficient profits can also be attributed to factors such as higher input costs and lower output prices. Imperfect markets such as the distance from input suppliers and the lack of competition can also contribute toward such problems. The lack of local support structures can also contribute toward the profitability of the wool system.

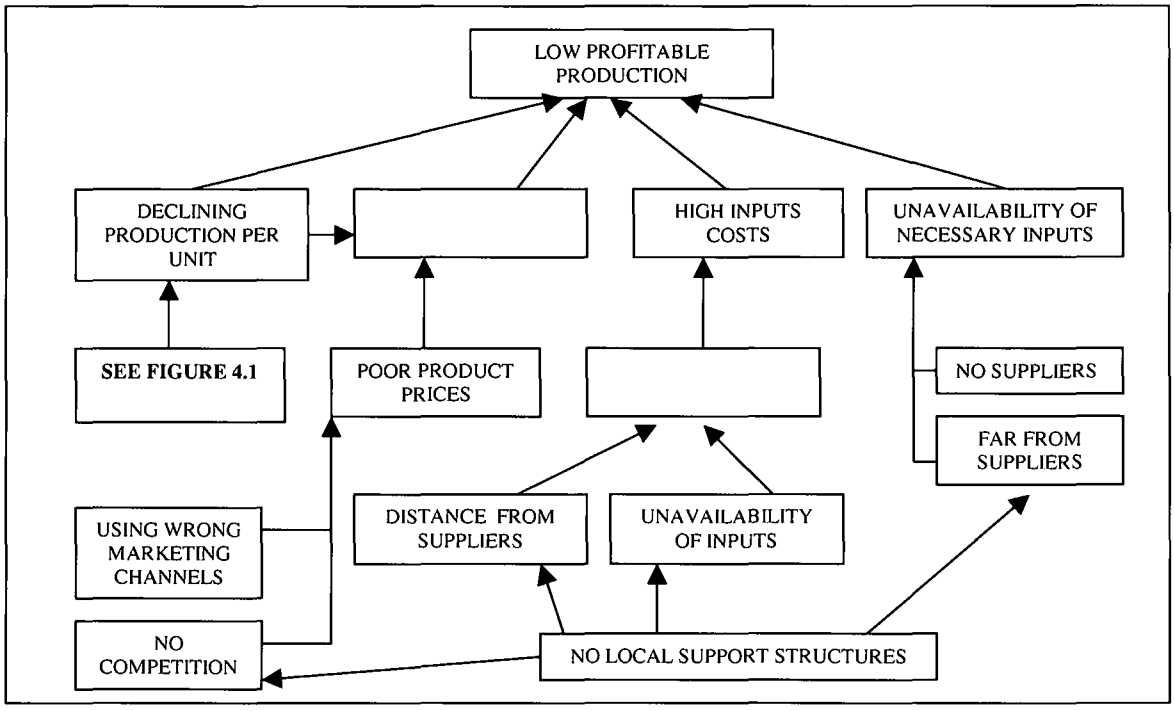

Figure 4.2: Problem conceptualisation, unpacking the possible reasons for unprofitable production of wool in Lesotho

4.3 PRODUCTION DETERMINANTS

Production output is the function of various inputs and evaluation of these inputs is necessary to understand and appraise the production output for wool. Factors directly influencing total output are flock numbers and yield per unit. It is however not sufficient to measure output merely in quantitative terms because wool quality is also an important determinant of prices.

Producers can influence stock numbers, yield per unit as well as quality. These determinants are therefore discussed together. Flock numbers, yields per unit and wool quality are furthermore a result of various production inputs and are referred to as production output determinants in this chapter. Production output can be explained more easily by means of the following algebraic equation:

Total wool revenue (Y_{Wool})		=	$f(X_1,X_2,)\ PX_{Wool}$
Where:	P_XX_{Wool}	=	$f(Q_1,X_3,X_4)$
	Y_{Wool}	=	Total wool revenue
	X_1	=	Number of sheep
	X_2	=	kg wool per sheep
	P_X	=	Price of wool
	Q_1	=	Quality of wool clip
	X_3	=	International wool prices
	X_4	=	Exchange rate

Factors such as stock theft, reproduction rates, mortalities, purchases, sales and slaughtering influenced stock numbers directly. Yield, on the other hand, is a function of genetic quality, feeding and management decisions. Quality is influenced by factors such as genetic material, feeding, management practices and handling and sorting of the clip

4.3.1 Sheep numbers in Lesotho

Table 4.1 presents the sheep numbers per district from 1983/1984 to 2000/2001. It is interesting to note that sheep numbers decreased to a lesser extent in certain districts than in others. Statistics obtained from the Department of Statistic, are however not very reliable and although few discrepancies could be identified in the total numbers for the country, figures per district seems to be incorrect for some years. Huge discrepancies occur in districts such as Quacha's Nek, Mohaleshoek, Mafeteng and Maseru.

From Table 4.1 it is evident that nearly all districts experienced a decline in sheep numbers, except for districts such as Mafeteng, Quthing and Quacha's Nek.

Table 4.1: Sheep numbers per district (1983-2001).

Year	District										Total
	Butha-B.	Leribe	Berea	Maseru	Mafeteng	M Hoek	Quthing	Q Nek	Mkhotlg	T. Tseka	
1983/84	86 375	106 875	86 875	106 375	137 000	137 250	108 600	59 375	268 500	183 750	**1 280 975**
1984/85	73 157	62 625	47 750	167 625	129 875	176 500	213 375	37 406	186 250	317 625	**1 412 188**
1985/86	61 775	174 187	35 375	131 000	93 625	79 750	118 750	58 975	273 375	364 813	**1 391 625**
1986/87	106 663	142 140	60 751	157 599	138 021	149 582	211 610	123 380	203 677	409 428	**1 703 809**
1987/88	91 060	106 025	85 625	122 500	116 625	130 250	149 375	166 810	251 625	410 250	**1 650 145**
1988/89	134 000	159 425	42 500	110 625	115 500	122 500	103 125	90 135	183 750	443 375	**1 504 935**
1989/90	127 667	165 787	49 409	107 093	109 019	119 229	112 749	88 681	179 231	318 888	**1 377 753**
1990/91	76 642	115 744	92 662	123 863	115 048	136 114	182 650	250 334	192753	181 976	**1 467 786**
1991/92	82 015	127 152	33 914	115 479	96 115	144 620	124 875	329 012	158 881	170 492	**1 382 555**
1992/93	103 670	93 675	44 750	103 875	83 250	92 750	164 250	145 885	163 125	181 250	**1 176 480**
1993/94	88 250	81 025	42 000	132 875	139 625	92 000	129 500	10 970	178 125	283 625	**1 177 995**
1994/95	55 280	62 200	44 625	146 250	107 625	103 375	126 000	59 520	219 250	206 625	**1 130 750**
1995/96	41 490	113 150	42 750	77 875	87 375	59 875	41 375	74 055	105 500	288 625	**932 070**
1996/97	72 185	89 125	35 250	82 250	119 125	96 375	92 500	52 075	93 419	205 500	**937 804**
1997/98	30 755	46 000	29 875	56 125	176 125	101 750	92 625	65 600	79 875	102 750	**723 440**
1998/99	46 660	57 175	25 000	68 125	112 205	119 500	93 250	118 154	79 125	146 625	**935 819**
1999/00	56 907	106 600	63 800	191 000	147 700	104 000	99 500	56 300	147 800	135 500	**1 109 107**
2000/01	59 945	108 450	60 250	153 700	138 564	86 645	99 375	52 200	165 125	192 375	**1 116 629**

Source: Bureau of Statistics , 2001

A t-test was conducted to test the hypothesis that stock theft in a specific district contributed towards the national decline in sheep numbers. The results of the t-test, shown in table 4.2, indicate that the hypothesis is correct and can be rejected in only the districts, Quagga's Nek and Mafeteng. According to these results, it seems that the negative relation between stock theft and the decline in stock numbers in most of the district is statistically significant.

Table 4.2: Statistical significance of stock theft in districts as a contributing factor to the national decline in sheep numbers from 1983 to 2000.

District	t-test	Probability
Butha-Buthe	3.28	0.005
Leribe	2.51	0.024
Berea	2.81	0.013
Maseru	4.13	0.001
Mafeteng	-.77	0.451
Mohaleshoek	2.52	0.024
Quthing	2.22	0.042
Quagga's Nek	1.41	0.180
Mokhotlong	4.32	0.001
Thaba-Tseka	3.87	0.002

The long-term trend for small stock numbers (sheep and goats) is illustrated in Figure 4.3. The average decrease in sheep numbers for the period 1984 to 2001 is approximately 35%. The decline in numbers obviously have a large impact on total wool production in the country.

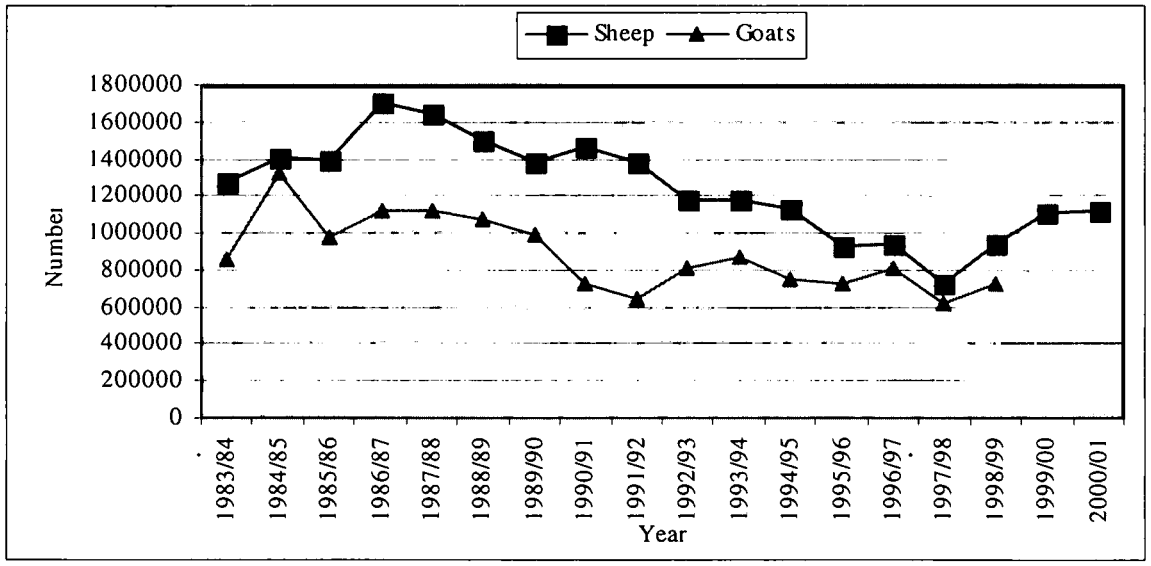

Figure 4.3: Long term trend for small stock numbers in Lesotho.

4.3.2 Wool yields

Average wool yields are very low compared to yields of production areas in South Africa with similar climatic conditions. Average wool yields declined from 4.37 kg per sheep during

the period 1946 to 1955 to as low as 2.07 kg during 1996 to 2000. In comparison, the South African yield increased from 3.7 kg to 4.05 kg during the same period (Table 4.3).

Table 4.3: Wool production per unit in Lesotho and South Africa (1946 – 2001)

Year	Lesotho (kg wool per sheep)	South Africa (kg wool per sheep)
1946 - 1950	4.37	3.70
1951 - 1955	3.36	3.80
1956 - 1960	3.26	3.90
1961 - 1965	3.98	4.00
1966 - 1970	3.50	4.20
1971 - 1975	3.48	3.90
1976 - 1980	2.47	3.60
1981 - 1985	2.98	4.00
1986 - 1990	2.52	3.57
1991 - 1995	2.98	4.13
1995 - 2001	2.07	4.05

Source: Abenet et al, (1993) and Bureau of Statistics, (2001)

Figure 4.4 clearly illustrates graphically the widening in the gap of wool production per unit between Lesotho and South Africa, especially since 1970.

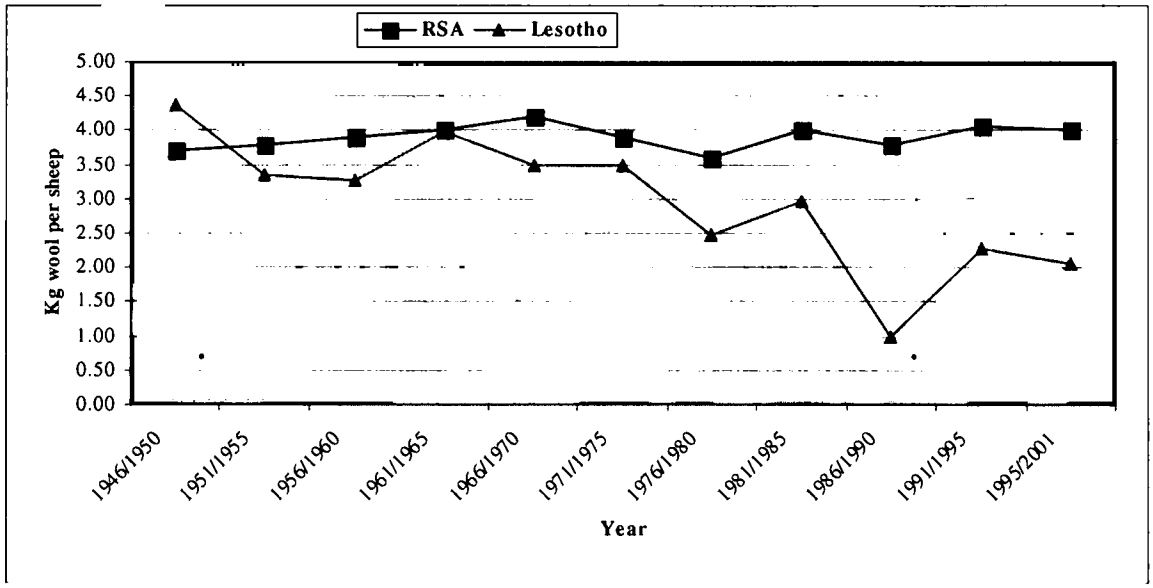

Figure 4.4: Decline in average wool production per sheep in Lesotho compared to South Africa (1946-2001)

It is interesting to note that, according to these statistics, wool production in Lesotho was higher than in South Africa from 1945 to 1951. The decline in production per unit represents a decrease in production of more than 53%. This poses serious questions about the present and future competitiveness of the Lesotho wool industry. One can rightfully ask; what went wrong since the 1950's? It is clear from the data presented in table 4.3 and figure 4.4 that average wool production is still declining if evaluated over the long term. It is also shown in Table 4.3 that an all-time low yield of less than 2 kg per unit was obtained since the mid 1980's. It is quite significant, however, that average yield obtained by shearing shed producers continues to be constant at approximately 2.5 kg per unit, as indicated in Table 4.4 and Figure 4.5.

Table 4.4 clearly illustrates the decline in wool production since the early to mid 1980s from around 3 million kg to about 2 million kg at the end of the century. It represents a decline of about 30% in total production.

Table 4.4: Shearing shed wool production in comparison to the total national production (1983 to 2002).

Year	National wool production (kg)	Wool production at shearing sheds (kg)	National average yield (kg/unit)	Average yield at shearing sheds (kg/unit)
1983/84	3 088 148	1 860 941	2.41	2.40
1984/85	2 902 195	1 780 346	2.06	2.40
1985/86	3 242 651	1 934 845	2.33	2.44
1986/87	3 134 870	1 791 807	1.97	2.35
1987/88	1 671 440	1 572 360	0.87	2.36
1988/89	2 402 107	1 634 937	1.60	2.39
1989/90	1 569 107	1 518 048	1.14	2.46
1990/91	2 544 040	1 621 060	1.73	2.47
1991/92	1 882 716	1 288 658	1.36	2.40
1992/93	2 090 076	1 545 523	1.78	2.50
1993/94	1 710 064	1 649 526	1.45	2.62
1994/95	1 955 167	1 407 862	1.73	2.47
1995/96	2 082 534	1 570 432	2.23	2.70
1996/97	1 801 618	1 365 023	1.92	2.46
1997/98	1 462 284	1 300 972	2.02	2.47
1998/99	2 091 360	1 288 601	2.23	2.57
1999/00	2 151 280	1 301 654	1.94	2.67
2000/01	2 077 015	1 327 455	1.86	2.62

Source: Bureau of Statistics, (2001) and BKB, (2003)

It is also notable from Figure 4.5 that average yields at shearing sheds are considerably more constant than national yields.

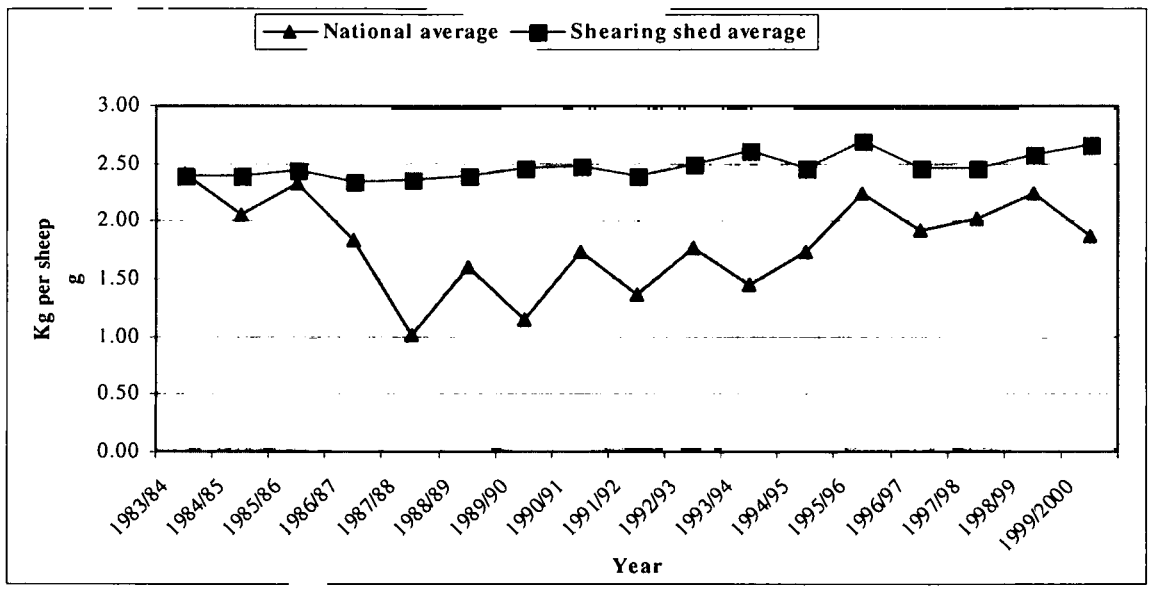

Figure 4.5: Trends in national wool production compared to the production of shearing sheds (1980 to 2002) (BOS, 2001; BKB, 2003)

Some explanations for the more stable production amongst shearing shed farmers could be one of the following:

- The inconsistency and inaccuracy of national livestock census figures obtained from the Bureau of Statistics, compared to the very accurate statistical data available on shearing shed production; or
- many small farmers only sell their wool to the traders once every second year, when traders pass their locations. In Lesotho it is commonly referred to as "*wool that is kept under the bed*"; or
- traders do not supply correct data to the Department of Trade and Industry and to the Department of Agriculture.

4.3.3 Wool Properties and Quality of Wool

Wool properties are appraised during shearing and some are later tested in wool laboratories before and after sale. The variability exhibited by wool properties within a single staple,

fleece, sale lot and processing blend make subjective measurement and appraisal of wool difficult in sheds and on wool sale factors (Cottle, 1991).

Most greasy wool properties influence the ease of processing and the total cost of processing (Cottle, 1991). The limitations of greasy wool make it less attractive to buyers and its price is usually discounted. Ryder and Stephenson (1968) found that most wool properties also influence the end product properties. Wool producers should therefore recognise the importance of the following properties in their wool clip:

- **Fibre diameter (FD)** is expressed in micrometers and has great effect on processing performance and therefore price (Cottle, 1991).
- **Yields** are a reliable estimate of the quantity of useable wool fibre present in a fleece sample. Wools with higher yield percentages are preferable because processors are likely to get more weight of the product and incur lower processing expenses and disposal of impurities (Ryder and Stephenson, 1968).
- **Vegetable matter (VM)** is a fault in greasy wool, it reduces yield and causes problems in processing. The VM in a fleece is costly to remove, therefore wools with this fault are downgraded and buyers pay lower prices for them (Cottle, 1991). The Australian Wool Corporation (AWC) categorises VM according to the ease of removal during processing.
- **Staple length** is the length of fleece sheared at a specific point in time.
- **Staple strength** is expressed as the power measured in Newton per kilotex (N/ktex) required to break a staple of given thickness. Wool prices discount according to staple strength and tender wools are heavily discounted (Ryder and Stephenson, 1968).
- **Clean wool colour** varies from white to shades of cream, to yellow and brown. Markdown in wool prices is dramatic with contaminated wool (Ryder and Stephenson, 1968; Schwellnus and Louw, 2003). Vegetable matter, miscellaneous stains of urine and poor management factors are responsible for non-microbial discolouration and damage to wool. External parasites cause wool discolouration by their excreta and loss in wool quantity through ill health of the sheep and deaths (Teasdale, 1988).

- Some sheep has genetically **coloured or pigmented fibres**. The coloured fibres in a sheep may occur in patches on the body, as individual fibres in a fleece or the sheep may be wholly coloured. Poor shed hygiene and management is sometimes responsible for the introduction of coloured fibre into the fleece. Coloured fibres are considered a fault in wool because it cannot dye to pale shades or be used for white garments. Wool pigmentation is a major problem in main producing countries as well in Lesotho (Schwellnuss, 2003).
- **Resistance to compression (RC)** is the force (kPa) required to compress a mass of wool to a given volume (Teasdale, 1988). Sea freight costs are one of the major expenses in exported wool. Greasy wool is therefore compressed to a density of 6.4 to 10.5 kg per cubic meter. RC is a function of fibre diameter and single fibre crimp. Single fibre crimp frequency and shape are more important properties than the identifiable staple crimp (Teasdale, 1988).

Compared with international standards, no serious problems could be identified in the quality of the national wool clip. However, it was noted that the national average microns for Lesotho's wool are below the national average of the South African clip, a feature that should increase returns for the Lesotho woolgrowers. A general problem of the Lesotho wool clip however, is the presence of black wool (Schwellnuss and Louw, 2003). Wool buyers tend to highlight the negative features of the product they purchase and black wool content overshadow the positive effect of low microns and therefore impact negatively on Lesotho wool prices.

Wool buyers pay prices related to international standards and producers should strive to produce the highest quality produce possible (Cape Wools, 2002). **Wool fineness** is a very important classing standard, as high quality material can be produced from fine wool. Some people ascribe the fact that Lesotho farmers produce such fine wool to the fact that wool is produced at such high altitudes, though no scientific evidence to support this could be found. Others are of the opinion that lack of proper feeding results in fine wool occurring in Lesotho and it is therefore called *"hunger fineness"* (Tsoanamatsie, 2003; Van der Vyver and Kritzinger, 2003; Schwellnuss and Louw, 2003; Pienaar, 2003). The result of poor feeding is normally a break in the wool, but this is not a general problem in the Lesotho clip

(Tsoanamatsie, 2003, Schwellnuss and Louw, 2003). No scientific evidence could be found regarding the exact reasons for the fine wool quality but the explanation of *"hunger fineness"* seems to the most logical. This is however, a subject for future studies.

Black wool content seriously influencing the Lesotho wool prices negatively. Buyers have already labelled Lesotho wool as a clip with pigment (black wool) (Schwellnuss and Louw, 2003). Buyers adjust their offers on the auctions accordingly. Pigment can be eliminated by means of proper breeding programs that focus on the use of rams without any pigment, though this may take many years to achieve. Lesotho farmers should however, embark on a selection program to ensure elimination of pigment in their flocks. An alarming fact is that pigment was found in most of the breeding material inspected during the course of this study. Kew (2003) also mentioned that pigment is a problem, even in breeding rams that are purchased from South African breeders

4.4 REPRODUCTION

The reproduction rate is strongly influenced by factors such as feeding, ewe and ram fertility, mortality, ram to ewe ratios, and management practices. The amount of new stock available annually for production purposes is decisive for the profitability of stock farming and the following definitions are used to describe reproduction rates:

- *Lamb percentage*: Number of lambs born per number of ewes mated.
- *Wean percentage*: Number of lambs weaned per number of ewes mated.
- *Annual progeny*: Number of lambs weaned – lambs stolen – lamb deaths due to illness'– lambs lost.

Reproduction has a direct impact on stock numbers. It is evident from Table 4.5 that the lamb to female ratio or average lambing percentage between 1983 and 1998 is only 33.4%, which is unacceptably low. The RRA results as indicated in table 4.6 however, shows a 83% lambing percentage (shearing shed farmers) with a 67% weaning percentage. A national weaning percentage of only 33.4% as indicated by the BOS seems unrealistic low whereas a lambing percentage of 83% indicated by the shearing shed respondents, on the other side, seems to be very high.

Table 4.5: Lamb to ewe ratio in sheep (1983 to 1999)

Year	Ewes over one year	Lambs	Lamb to female ratio
1983/84	727 575	309 625	43
1984/85	777 031	327 438	42
1985/86	754 583	361 925	48
1986/87	966 499	325 809	34
1987/88	956 735	339 125	35
1988/89	877 665	305 370	35
1989/90	778 189	333 475	43
1990/91	761 367	242 333	32
1991/92	211 985	273 410	32
1992/93	751 885	178 630	24
1993/94	754 800	217 810	29
1994/95	676 550	127 070	19
1995/96	542 000	114 175	21
1996/97	553 343	97 740	18
1997/98	420 605	171 800	41
1998/99	525 284	206 897	39
Average lamb to ewe ratio (1984 – 1999)			**33.4 %**

Source: Bureau of Statistics, (2001)

The number of lambs as a percentage of total adult flock is only 44% (Table 4.6). This is the result of the high number of hamels (castrated male sheep) kept by the farmers. According to the results indicated in table 4.6, shearing shed farmers have an average of 29 hamels and 55 ewes and non-shearing shed farmers, 15 hamels and 27 ewes. The high number of average male animals in the flocks is one of the main reasons of the low reproduction rates.

Table 4.6 indicates that ram to ewe ratios between shearing shed farmers and others are not significantly different but is seems that a higher percentage of non-shearing shed farmers are using their own rams as breeding material, compared to shearing shed farmers, who buy most of their breeding material from South African breeders. The ewe to ram ratio for shearing shed farmers is 32 ewes per ram.

Many of the smaller farmers who do not make use of shearing sheds indicated that they use their neighbours' rams. Average rams per ewe available amongst non-shearing shed farmers are 21 ewes per ram. Of the 86 shearing shed respondents, 81 indicated that they own rams, with 5 farmers indicating that they use borrowed rams. Amongst non-shearing shed farmers a

total of 19 out of a possible 24 indicated ram ownership with 5 using borrowed rams and three farmers indicating that they supplement their own rams with borrowed rams.

Table 4.6: Summary of reproductive results obtained from RRA

Description	Shearing shed farmers (n = 86)	Non-shearing shed farmers (n = 24)
	Number sheep	Number sheep
Average flock size excluding lambs	86	44
Average flock size incl. lambs	109	62
Average number of Rams owned	2	1.9
Average number of ewes	55	27
Average number hammels	29	15
Average number lambs	33	18
Ewes per Ram by ram owners	32	21
Number of ram owners	81	19
Respondents buying RSA rams	60	5
Respondents using own breeding material	42	12
Respondents using own breeding material and RSA rams	27	1
Respondents using Lesotho bred rams	15	3
Average lamb %	83%	67%
Average weaning %	67%	59%
Lambs as a % of total adult flock	44%	36%

Out of the 86 shearing shed farmers who participated in the RRA, 68 indicated that they are merino farmers with an average adult flock size of 75 (105 if lambs are included). Sixteen shearing shed respondents indicated the use of breeds other than merino with average flock size of 94. Average adult flock size (male flock included) among non-shearing shed farmers is 44 plus 18 lambs. The average flock sizes amongst non-shearing shed farmers are nearly 50% smaller than farmers making use of shearing sheds.

4.4.1 Actions to Resolve Reproduction Problems

Increased reproduction is closely related to proper feeding. Factors such as infertile rams and ewes as well as ram to ewe ratios have an effect on reproduction rates. In addition to the dipping services, government, through its Department of Field Services, should consider the implementation of a fertility testing program on rams prior to their mating seasons. Farmers should also be encouraged to cull ewes that do not reproduce regularly. Reproduction should

be included in an extension program. Producers should be made aware of the fact that they must exercise care when purchasing rams. They should demand fertility test certificates with each purchase as well as the right to exchange the ram for another if a fertility test proves to be negative one year later. It is also imperative that farmers reduce the number of male animals and replace the hammels with quality ewes with reproductive potential. Preconditions such as proper feeding, etc. will naturally prevail.

Due to the lack of baseline data, the quality of genetic material available today cannot be compared to that available 40 years ago. The question therefore arises: does the quality of genetic material decrease or is the decline in production output the result of other factors? It is suspected that the quality of genetic material indeed decreased and the introduction of specifically designed breeding programs and the purchase and use of rams with superior genetic quality should be used.

4.4.2 Breeding Programs

South African merino rams are purchased mainly from Mr. Andries Pienaar of the Andries Pienaar stud in Colesberg, and Mr. Eddie Prinsloo of Smithfield. The Department of Field Services, Frazers and Mahloenyeng act as agents on behalf of the Lesotho farmers, from where they obtain orders to purchase rams. They then negotiate bulk-buying arrangements with South African breeders, transport the rams and distribute them to the various clients in Lesotho (Tsoanamatsie, 2003). Frazers purchases at least 75 rams annually from Mr. Eddie Prinsloo for resale to Lesotho farmers (Staples, 2003). This *modus operandi* does not take the genetic needs of the individual flocks into account and therefore does not ensure the appropriate rams for the specific flocks. Another problem of this method of ram purchasing is that because of the lack of sufficient funds, farmers cannot afford to pay top prices for rams and are in many instances obliged to purchase the "tail" or lower quality rams from breeders. This applies particularly when too many rams are purchased from only one breeder. This practice does not allow or assist farmers to select rams with specific features needed for their flocks. It does not augment the quality of individual flocks. Improvement of breeding material is only possible if stockowners use specifically selected rams, and focus on features they need to improve or genetic features they wish to eliminate, such as pigment or black

wool in sheep. Both of these features are strongly genetically related. It is possible to eliminate these problems by introducing a well-planned breeding program. The opposite is currently happening to the Lesotho clip, where there is increasing evidence of pigment in wool (Schwellnuss and Louw, 2003; Vd Vyver and Kritzinger, 2003).

A possible solution is the introduction of a ram breeding scheme in conjunction with the Wool Growers Association in South Africa. Moore (2003) indicated that the National Wool Growers Association in South Africa (NWGA) is willing to participate and assist the Lesotho producers with such a program. The Merino Breeders Association of South Africa has also pledged their support to assist farmers in Lesotho (Pienaar, 2003; Prinsloo, 2003)

Such a project will be aimed at the genetic improvement of wool sheep in Lesotho to contribute towards increased product income. The genetic potential of sheep with regard to reproduction, growth and quality and quantity of wool is an essential element of a larger holistic approach to increased production of wool in Lesotho. Another aspect which is of the utmost importance for such a proposed project, is the gathering of information required for measuring its impact. The breeding program will therefore consist of three distinct processes, namely:

- The introduction of breeding material (rams) to a limited number of communities where relatively intensive procedures will be applied to measure the impact of this action and where group-breeding schemes will be initiated to eventually breed rams for neighbouring communities.
- Large-scale distribution of rams, selected by the Group Breeding Scheme, to other communities where the impact will not be evaluated directly.
- Training and support of farmers to ensure that goals are attained.

Implementation of such a project should be a joint venture between the Lesotho Wool and Mohair Growers Association, Ministry of Agriculture, National Wool Growers Association of South Africa and other relevant institutions within Lesotho and South Africa (Moore, 2003). The possibility of implementing such a project as part of the NEPAD initiative should be exploited.

Agents purchasing rams in South Africa on behalf of Lesotho farmers should purchase according to the specific needs of individual farmers. Agents should also caution against the practice to purchase many rams from only one breeder, consequently ending up with the "tail" or lower quality rams from a specific breeder. Caution should also be exercised to purchase rams from the same breeder year after year, because of the danger of inbreeding, especially taking into account the fact that Lesotho buyers cannot afford to purchase the best rams available.

The average ram in Lesotho is subject to harsh environmental circumstances – consequently overfed and kraal-reared rams under-perform as soon as they are exposed to the Lesotho environment. It is therefore important that Lesotho buyers should focus on rams that are bred by veld clubs under more or less the same conditions as in Lesotho. The NWGA and the Merino Breeders Association in South Africa have pledged their support by supplying Lesotho buyers with the necessary information in this regard (Moore, 2003; Pienaar, 2003; Prinsloo, 2003).

Genetic improvement is a long-term undertaking with considerable lag between the investments and their benefits. Breeding programs endeavour to improve quality of livestock genetics by culling poor quality animals, castration, the use of superior quality rams for breeding purposes, and the small-stock exchange program.

- *Culling:* The aim with culling among small stock is the elimination of sheep with black wool or pigment. If applied consistently, the effect of culling can be considerable due to the strong genetic correlation of fibre colour in sheep. Culling can also reduce the incidence of kemp (hairy fibres in the wool), but this requires a more thorough examination of the animals concerned. The following considerations are also very important if animals are selected for culling and farmers should select their flock strictly according the following measurements.
    - Reproduction is strongly genetically related and farmers should identify ewes with a poor reproduction history and cull these animals immediately.
    - Composition of animals is decisive for wool production as well as meat production, and animals with poor composition should be culled.

- *Castration:* According to official statistics about 75% of male cattle, sheep and goats are being castrated. This can constitute appreciable selection pressure, provided the criteria for selection are closely associated with productivity.
- *Breeds:* Merino sheep and angora goats have been the two main small-stock breeds in Lesotho since the late 1800s. Government today still supports these two breeds strongly with the purpose of keeping the quality of mohair and wool intact. The policy of supporting only these two breeds prohibits inbreeding from crossbreeds. The wool industry was protected to a great extent because of this policy but the question can rightly be asked if the merino could be outperformed in financial gains by other breeds such as the Dohne merino and SA mutton merino. These other breeds would possibly outperform the merino during times of low wool prices due to their superior meat production qualities. Wool contamination with these breeds is not a problem because both breeds produce white wool. However, introduction of new breeds is not justified while the emphasis is on production of fibre production.
- *Small Stock Exchange Program:* In this scheme two improved animals are provided in exchange for three unimproved (culled) animals. Most of the animals distributed under the program are rams purchased from the RSA. Producers have welcomed the practice since they know the superior quality of the animals introduced. This measure could encourage farmers to continue overstocking, albeit by animals of improved quality. Although numbers fluctuate from year to year, in some years up to 1 200 rams have been distributed amongst farmers. Under an extensive management system it is difficult to conceive other possible methods of genetic intervention. The challenge is therefore to improve, and if necessary, expand the use of this method.

Some breeders in South Africa already support merino farmers in Lesotho by means of active involvement during training and farmers days (Pienaar, 2003; Prinsloo, 2003; Kew, 2003). This support is highly appreciated by Lesotho wool farmers and positive results are evident due to their involvement.

4.5 STOCK LOSSES

Stock theft and stock losses due to diseases are the two major causes of stock loss in Lesotho. The RRA conducted in this study indicated similar figures for losses due to theft and diseases. Farmers indicated that on average 8% of their total flock is stolen annually and losses due to illness add up to 7% (Table 4.7). Another 5% of sheep are lost annually due to predators and other reasons. Interesting is that goat losses coincide with that of sheep.

Table 4.7: Annual small stock losses for 2002

Annual losses - reasons	Goats		Sheep	
	% of annual losses*	% of total flock	% of annual losses**	% of total flock
Theft	41%	8%	39%	8%
Died from illness	41%	8%	34%	7%
Predators (jackals)	12%	2%	15%	3%
Lost (unexplained reasons)	6%	1%	9%	2%
Total losses as % of flock		**20%**		**22%**

** Calculated as the percentage contribution toward annual goat losses*
*** Calculated as the percentage contribution toward annual sheep losses*

Total losses add up to 22% of the sheep flock. This mortality and losses are the major reasons for the decline in flock numbers. The reproduction rate for sheep is only 33.4 lambs per 100 ewes (Bureau of Statistics, 2002). Stock losses of 22% due to mortality and theft are calculated as a percentage of the total flock (male and female), whereas reproduction rates are calculated as lambs per 100 female. According to the RRA data, the average number of lambs weaned per year equals 37. Stock losses of 22% then represent 23 animals lost per year by shearing shed farmers. This leaves the farmer with only 14 lambs available to replace culled and old animals and to use for household consumption. It is obvious that reproduction alone cannot replace animals lost annually due to theft and disease-related mortalities. Inadequate numbers of animals are available for selection of better quality genetic material because farmers have to retain all progeny for production or face serious declines in their numbers. The genetic pool for selection became simply too small as a result of stock losses and low reproduction rates.

4.5.1 Stock Theft

Many woolgrowers in Lesotho regard stock theft as the major reason for the decline in sheep numbers. Reports from individual farmers include losses of as high as 80% (Tsoanamatsie, 2003; Moteane, 2003). Sometimes farmers never recover financially from such losses. National figures for stock theft since 1993 indicate no statistically significant increase, with the exception of 1998 and 1999, which was characterised by a dramatic increase in stock theft. Table 4.8 shows evidence of an increase from 11 633 in 1997 to 22 089 in 1999 but it again declined to 14 300 in 2001.

Table 4.8: National sheep theft figures (1993 to 2001).

Year	Stolen	Recovered	Sheep never recovered	Value of stolen sheep (M)	Value of recovered sheep (M)	Value of lost sheep (M)
1993	15 125	3 614	11 511	3781 250	903 500	2 877 750
1994	10 651	1 894	8 757	2 662 750	473 500	2 189 250
1995	15 733	3 261	12 472	3 933 250	815 250	3 118 000
1996	13 710	3 149	10 561	3 427 500	787 250	2 640 250
1997	11 633	3 173	8 460	2 908 250	793 250	2 115 000
1998	18 378	4 403	13 975	4 594 500	1 100 750	3 493 750
1999	22 089	5 700	16 389	5 513 400	1 320 900	4 192 500
2000	16 325	4 336	11 989	6 626 700	1 710 000	4 916 700
2001	14 321	4 414	9 907	4 89 7500	1 300 800	3 596 700
Total	**137 965**	**33 944**	**104 021**	**3 834 5100**	**9 205 200**	**29 139 900**

Source: BOS (2001)

The value of stock lost during 2000 adds up to at least M4 916 700[1] and M3 596 700 during 2001, calculated at M300 per animal. Wool production of at least 20 000 kg with a sales value of M400 000 was lost during 2001 as a direct result of stock theft. It is possible that wool from stolen stock enters the industry through thieves but this income is lost to honest farmers.

A recent study conducted by Kynoch and Ulicki with the assistance of Cekwane, Mohapi, Phakisi and Seithleko (2001) on cross-border raids and stock theft noted the following important findings:

[1] Maluti: Currency for Lesotho. 1Maluti = 1Rand.

- Although stock theft is not a new phenomenon in the southern Lesotho border zone, it became more widespread, organised and violent in the 1990s. Some 71% of Basotho stockowners reported having had stock stolen since 1990, many on more than one occasion. Over 40% of farmers who do not own stock say they are without animals as a result of stock theft.

- Since 1990, 85% of stockowners in the border villages have lost animals to theft, compared to 49% of stockowners in non-border villages. Shepherds from border villages also report a higher rate of victimisation by criminals (83%) than those further removed from the border (50%).

- Most cattle and sheep are stolen from cattle posts where only shepherds guard them. Stock is also taken from village kraals and, on occasion, whole villages have been attacked and all the stock driven off. Villagers in all ten villages rate stock theft as a serious problem.

- Stock thieves come from within Lesotho as well as across the border from South Africa. Basotho stock thieves also carry out raids in South Africa and vice versa. Gun use is widespread, although South African raiders seem to have greater access to arms.

- Much of the theft appears to be coordinated by well-organised criminal gangs but reliable information about their composition and organisation is difficult to access. Criminal networks in Lesotho and South Africa also cooperate to dispose of stolen animals in the lowlands of Lesotho and as far a field as Port Elizabeth, Durban and Welkom.

- The upsurge in stock theft is clearly related to increasing poverty in the region. On both sides of the border, mine retrenchments have hit hard, sending experienced miners home and denying young men access to paid employment. Not only has this exacerbated household and community poverty, but it has provided willing foot-soldiers for stock thieves. Stock raiding produces further

impoverishment, insecurity and suspicion, fuelling the escalating cycle of theft and counter-theft.

- Though not itself in dispute or a source of conflict *per se*, the Lesotho-South African border plays an essential role in the organisation and impact of stock theft. There are significant differences in vulnerability and impact between villages close to the border and those further inland.

- The international border leads to a distinctive pattern of stock theft. In the simplest scenario, raiders from one side steal from border villages on the other and vice versa and drive the stock back over the border. The situation becomes more problematic when Basotho stock thieves use the border as a refuge, stealing from Basotho and driving the animals across the border into South Africa to sell or exchange with South African thieves.

- Cross-border counter-raids to retrieve lost stock and revenge attacks are also common on both sides of the border. South African victims target Basotho border villages for revenge raids, resulting in tension and friction between ordinary Basotho and South Africans.

- Stock raiding has major negative impacts on households, communities and cross-border interaction. The impacts also extend to the national economy. In Qacha's Nek and Quthing districts, production of wool has fallen significantly in the last five years. Livestock holdings have dropped and the numbers of stockless households has increased.

- Farmers are reluctant to invest in breeding cattle as households debate the merits of getting rid of their cattle. One prominent stockowner recently lost stock worth M200,000 (Tsoanamatsie, 2003). Stock theft has also has a deleterious effect on agriculture, reducing the availability of oxen for ploughing fields.

No-one is immune from small-scale and organised raiding. Stock theft, coupled with decreasing agricultural production and increasing unemployment, exacerbates poverty and

desperation. At the household and community level, this research confirmed the previous findings from Kynoch *et al* (2001):

Prevention efforts have involved some cross-border cooperation between villages to apprehend thieves and return cattle but these efforts are sporadic and have little effect on the problem. They often also lead to vicious reprisals from stock-theft syndicates. Vigilantism is on the rise in the face of widespread perceptions that the police and the courts on both sides of the border are either ineffectual or corrupt (Tsoanamatsie, 2003).

The small-stock industry with its low levels of reproduction and production cannot afford these losses and communities should investigate the introduction of *"village watches"*[2] to support the police in curtailing the stock theft problem. The problem of stock theft is of national interest and all government departments; communities and stakeholders should develop an integrated anti-stock theft plan that will prevent perpetrators from carrying out their deeds.

This study does not investigate the proposed use of microchips as an anti stock theft measure, as it could be a futile and expensive exercise. It will address a symptom and not the real cause of stock theft, namely poverty, greed and the inability of communities and society to organise and condemn the perpetrators. Introducing a microchip program would be very expensive and thieves will inevitably quickly find ways to evade the possible impact of the microchip program. The same amount of money could be spent on the improvement of extension services and other support programs to farmers instead.

Society, and more specifically communities, should take responsibility for the control of stock theft in their villages. Although it is regarded as the responsibility of the police, they cannot control the problem alone. A coordinated effort between communities, chiefs, the police and other government departments is needed to address the problem successfully. The establishment of a structure with its roots at local level is necessary to enable coordination between stockowners, local authorities, police and other departments at all levels of governance. Efforts by police to establish some informal linkages at local level are

[2] Villagers organised in local groups with the aim to liase with the Police to prevent stock theft.

insufficient to coordinate local and regional actions. A structure, instituted and supported by government, is necessary to address the stock theft problem nationally. A possible model is illustrated in Figure 4.6.

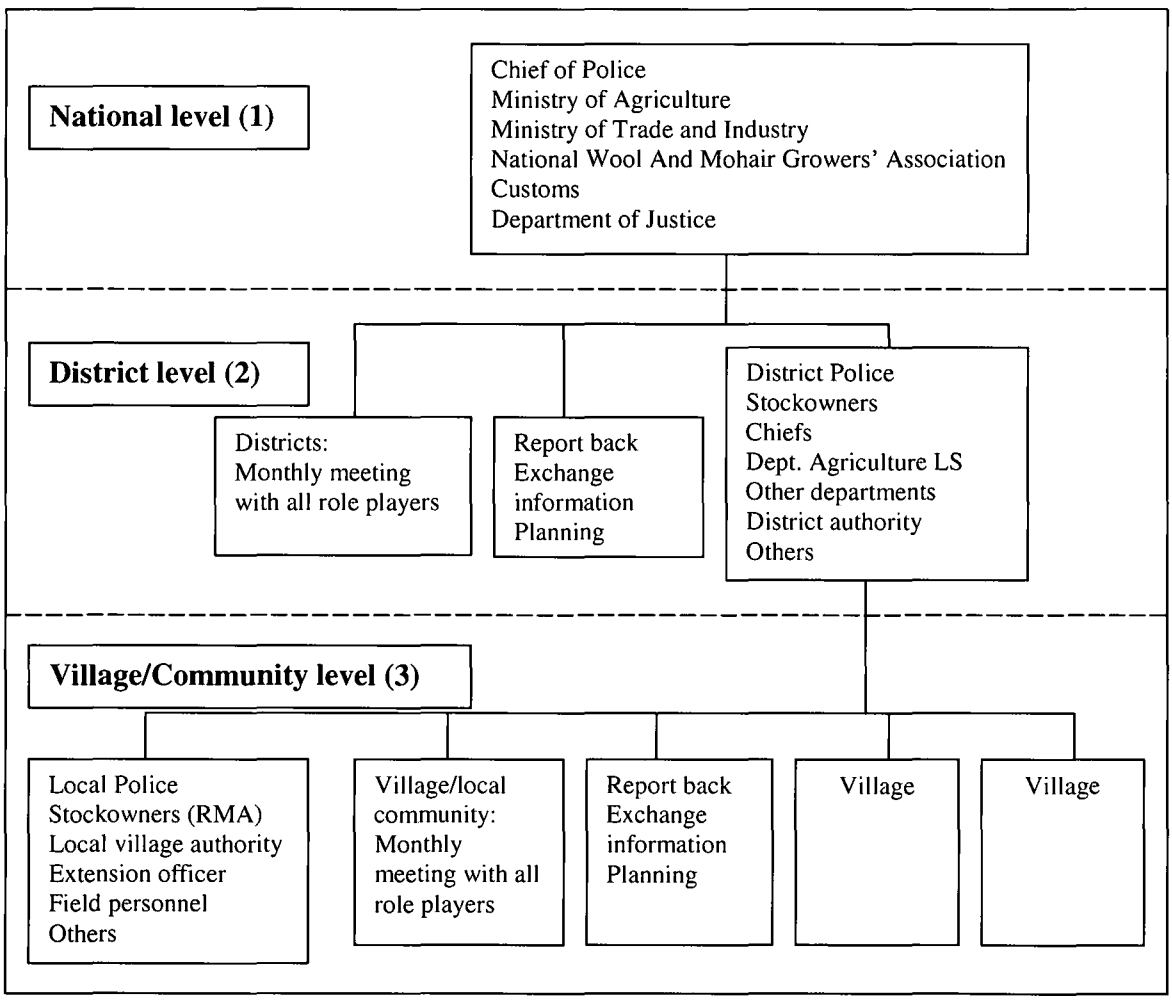

Figure 4.6: Proposed institutional structure to coordinate anti-stock theft actions

Level one is the national level where national decisions are taken. A body (committee) at this level will evaluate national policies that impact on issues such as stock theft. They will also ensure participation of all relevant departments. Operational guidelines will be developed and monitored from this level. Cross-border relations with the South African government, for instance, will be established here and institutions will be represented at this level, as indicated in Figure 4.6. The second level is the district level and each of the ten districts in

Lesotho should develop a committee at their level of responsibility. The third level is the village or community level, where operational decisions are executed.

It is important that all levels operate within a framework developed from the highest level. Participation at grassroots level is imperative. It is at grassroots level where the local stockowner, policeman, school principal, community leader, youth leader, extension officer and others meet and collaborate to apply anti stock theft measures.

4.5.2 Stock Losses Due to Disease

Farmers indicated that annual mortality due to illness amounts to 8% of their total flock numbers. This high mortality rate is reported in spite of the fact that more than 80% of respondents indicated the use of internal and external parasite remedies (Table 4.9). Although most farmers use internal and external parasite remedies, only 33 percent of sheep farmers indicated the use of vaccines for pulpy kidney. Table 4.9 also shows that 25% of the shearing shed farmers indicate that they sometimes use anti-biotics (terramycin) to treat their animals and 45% of them make use of eye-powders. Less than 10 % of the farmers indicate the use of traditional remedies.

Table 4.9: Usage of medicinal and vet services

Remedy / Service	Shearing shed farmers (n = 85)	
	n	%
Use of external parasite remedies	70	82%
Internal parasite control	75	88%
Vaccines	28	33%
Terramycen anti-biotics	21	25%
Eye powder	36	42%
Traditional remedies for parasites	4	5%
Traditional remedies for diarriah	7	8%
Make use of vet services	69	81%

It seems that stock farmers generally support the Lesotho Livestock Health Services. More than 80% indicate that they make use of the veterinary services although only when they need them to solve serious problems. Due to transport problems, veterinary doctors stationed in towns make irregular visits to the few livestock improvement centres per district. Livestock attendants primarily provide farmers with services but they are generally ill

equipped, ill trained and poorly supplied with the necessary remedies. Sheep scab is still a serious problem in Lesotho and only a coordinated effort using a combination of dipping and medicinal treatment will control this problem (Tsoanamatsie, 2003). The most problematic diseases of small stock are anaplasmosis, liver fluke, pulpy kidney and bankrupt worm (IFAD, 2000).

Farmers are not willing to pay large amounts for treating their livestock, due to the lack of funds and a perception that the cost of treatment is too high. Some farmers do not manage and treat their livestock as an entity that is meant to generate income and profit. They invest as little as possible in the care and maintenance of their animals. Transaction costs to obtain the necessary treatment are also very high, especially in the rural areas where medicinal products are not readily available. Many stock farmers along the South African border purchase their medicines at outlets within South Africa where these products are readily available (Tsoanamatsie, 2003; Tuoanie, 2003; Kew, 2003). It was also found during the study that the only vaccines and medicines available in some rural places are products with old expiry dates. This will definitely impact negatively on the effectiveness of treatments.

Dipping for the control of external parasites is compulsory and the Department of Field Services perform this action. It is done during the months of January, February and March. Dosing for internal parasites, wherever applicable, is done 30 days after lambing and again six weeks later. Vaccination against sheep scab is done during July to September (IFAD, 2000). Not all-small stocks receive vaccines and scab is therefore carried over from one year to another by untreated animals. Other control measures are performed on an *ad hoc* basis only when symptoms of illness are identified; though 38 percent farmers indicated frequent use of veterinarians.

The problem of stock losses due to high mortality rates should be addressed by means of well-planned extension programs that address preventative actions for stock diseases. The dipping program executed by government should be expanded to include vaccination and internal parasite control programs.

Sheep scab still poses a serious threat in the country. The Department of Field Services should deal with this problem vigorously. An intensive monthly dipping program targeting all sheep and goats in the country should be followed until all evidence of sheep is eradicated. This should be supplemented with other remedies to eliminate the problem for once and for all. To make this work, all small stock should be included in such a project.

Field personnel should also ensure that stockowners only make use of remedies that are stored under the correct conditions (normally in a fridge) and attention should be paid to expiry dates. Reports of outdated medicines stored under incorrect conditions were received during the course of this study. The Department of Field Services through its field personnel should inspect outlets regularly to ensure that proper remedies are distributed.

High mortality rates can be controlled by means of better management practices. Once again poor feeding is the root of this problem as poorly fed animals are more prone to disease related mortality. Extension programs should therefore emphasise the importance of proper feeding coupled with the introduction of internal and external parasite control programs.

The Department of Field Services should extend and decentralise the present health control program to more regular treatments and allow the different associations to take responsibility for the execution of the program. It might be necessary to train members within each association to take responsibility for this task.

4.6 FEEDING

Small stock in Lesotho depends on the available natural grazing as its main source of feeding. Feeding is the single input factor that has the biggest effect on wool production in the country. Deterioration of Lesotho's rangelands can be regarded as a national disaster and various programs have been introduced to manage these rangelands. The present land tenure system makes it very difficult to manage the country's rangelands in a sustainable manner. Policies and projects to manage the rangelands include drastic measures such as the introduction of grazing fees, destocking initiatives, and enforced grazing patterns.

4.6.1 Rangeland Management

Lesotho has 22 Principal Chiefs, each controlling a specific geographic area. They are responsible for administrative matters through the village level chiefs. The Principal Chiefs are responsible for the allocation and control of summer (A pastures) and winter (B pastures) grazing areas. Stockholders wishing to graze on these areas must obtain grazing permits obtainable from the office of the Principal Chief who can ease his or her work by assigning one of the village-level chiefs under his or her jurisdiction to assist stockowners. The village level chiefs are normally responsible for the control of lowlands or C pastures. (See Table 4.10 for summary of pasture types.) The village-level chiefs are empowered by government and work closely with Village Development Councils (VDCs). Villagers elect the VDCs democratically and Chiefs are *ex officio* members of the Council (Mokitimi, 1988).

Table 4.10: Classification of grazing areas

Grazing area	Location	Period of use
A (*Lihlabeng* or mountains)	Higher elevations	November to March
B (*Mesikong* or foothills)	Transition between A and C	April to May
C (*Mahaeng* or lowlands)	Lowlands and near settlements and valleys	June to October

The VDC is the village administrative unit, and its effectiveness depends heavily on its relationship with the chief. However, VDCs are also involved in developmental issues at village level, such as allocation of land, managing natural resources, settling of disputes among villagers and deciding which areas of the grazing lands are to be reserved and for how long. Power struggles between chiefs and the VDCs have lead to mismanagement of natural resources in the past (IFAD, 2000; Tsoanamatsie, 2003). The chief however, is the highest authority in the village and he can overrule the VDCs if needed. The Community Based Organizations (COB's) are village-level institutions, which are more indigenous in origin and include anti-stock theft activities, group burial associations, knitting and sewing groups, poultry associations, farmers associations etc. (IFAD, 2000; Tsoanamatsie, 2003).

The chief is also entitled to declare certain areas *"leboella"* meaning that a specific area is closed for grazing purposes. The purpose of such a declaration normally relates to the management of renewable resources such as grass, trees and thatching materials. Rangers are

mandated control over these reserved places and are obliged to confiscate any animal and bring people trespassing before the chief. The people's respect for the chief and laws of the land underpins the success of the system (IFAD, 2000; Tsoanamatsie, 2003).

4.6.2 Grazing Patterns

Cattle posts are divided into the different veld types namely the highlands (A), foothills (B) and lowlands (C). Animals graze on the mountains or highlands during the summer and move down to the lowlands during the cold winter months. The foothills are normally utilised during the period April to May while flocks descend from the highlands to the lowlands prior to the winter. Stockowners try to limit grazing periods in the foothills (B pastures) and lowlands (C pastures, also referred to as village-level communal areas) to three months each (Neal and Artz, 1992; Tuoanie, 2003; Tsoanamatsie, 2003).

Herd owners generally avoid grazing too closely to village settlements due to problems associated with bringing large flocks into the villages each night, which might lead to the mixing of herds, stock theft, predation by dogs, disease transmission and damage to gardens (Neal and Artz, 1992; Tuoanie, 2003; Tsoanamatsie, 2003). The fact of the matter is that C pastures are normally overstocked and in poor condition, seemingly because of use by villagers owning only a few cattle or small stock who do not adhere to the chief's ruling concerning rangeland management. Control and management of rangelands is the responsibility of the VDC and they control the allocation of veld to stockowners. Table 4.11 provides an example of such an allocation in the southern part of Lesotho for the districts Mohaleshoek, Quthing and Mafeteng. Increased pressure on C pastures because of stock theft and migration of people from the mountains leads to increased soil erosion, especially in the lowlands. Farmers are unwilling to take their stock to cattle posts that are high in the mountains and far away from the villages (Shoup, 1987; Tsoanamtsie, 2003; Tuoanie, 2003). Over-utilisation of the lowlands leads to the need of more frequent use of harvested crops named stover grazing. Wool contamination as a result of this is higher because of more dust and different types of weeds such as cockle bur. Grazing within planted fields very often results in conflict between crop farmers and stockowners (Tsoanamatsie, 2003). The positive

side is the fact that the grazing pressure in the mountains is reduced to a certain extent, allowing grass in the mountains to recover.

Table 4.11: Example of rangeland allocations used by VDC

Month	J	F	M	A	M	J	J	A	S	O	N	D
Grazing area Ha Ngoae (Maf)	AB	B	B	B	C	C	C	C	C	B	B	B
Grazing area Ha Seeiso (Maf)	AB	AB	B	B	B	C	C	C	C	AB	AB	AB
Grazing area Ha Lekhari (Maf)	H	H	V	V	S	S	S	C	C	C	C	C
Grazing area Ha Nkau (Moh)	AB	AB	AB	AB	A	A	A	A	A	A	AB C	AB C
Grazing area Ha Qacha (Moh)	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC	BC
Grazing area Ha Ramarumo (Moh)	C	C	C	C	C	C	C	C	C	C	C	C
Grazing area Thaba-t'soeu (Moh)	C	C	C	BC	B	B	B	B	B	B	B	B
Grazing area Makatseng (Qiut)	AB	AB	AB	AB	B	C	C	C	AC	A	A	AB
Grazing area Ha Mopeli (Quit)	A	A	A	A	C	C	C	BC	B	B	C	C

IFAD, (2000)

(Maf) Mafeteng
(Moh) Mohale's Hoek
(Qut) Quthing

The uncontrolled and unrestricted settlement of people everywhere in the rural areas also contributed toward poor rangeland management practices. People tend to keep their animals as close as possible to their homes and consequently grazing utilisation patterns as developed by the VDC are ignored (Tsoanamatsie, 2003; Mafaesa, 2003). Control of rangelands within the land tenure system is very complex, but classification of rangelands into different groups is necessary for scientific management. The following classifications were done to enable stockowners and chiefs to control the rangelands (Shoup, 1987):

- *Masimong* or *mohoang* (stover grazing) – arable land open to winter grazing after harvest. The term refers to the lower parts of maize stocks left standing in the fields as fodder.
- *Meeli* – unploughed fields, boundaries between fields and terraces on which grasses can be cut for hay or grazed during the winter.
- *Makorota* – contour banks between fields that can be utilised for hay or grazed in the winter.
- *Litsiketsi* – unploughed and/or unallocated fields in which a particular weed is growing that can be grazed or cut for fuel during the winter
- *Mehola* – fields left fallow for one to two years, which can be grazed during the winter.
- *Meshoqa* – fields left fallow for more than two years; for grazing in both summer and winter.
- *Mehlomong* or *Malelu* – North facing slopes on which thatch grass grows. Open for grazing in late winter and spring.
- *Lifate* – woodlots that can be grazed if trees are old enough or spaced far enough apart. Goats are forbidden in *lifate*, but it is available for other livestock year-round.
- *Liphuleng* – marsh areas that is available for grazing all year long.
- *Lithoteng* – plateaus available for grazing in the summer months.
- *Matsoapong* – rocky slopes in the foothills available for grazing during most of the year.
- *Lihlaba* – hilltops and ridges available for grazing most of the year.
- *Maralla* – along dolerite dikes available for grazing most seasons of the year.
- *Matsiri* – hillsides in the foothills where grasses used for weaving are found, and available for grazing during the summer.
- *Khohlong* – slopes of valleys available for grazing during any season of the year.

Rangelands under the chief's or headman's control could be declared as "*maboella*" with the main purpose of allowing thatching grass (*mohlomo*; Hyparrhenia hirta) to grow to its

potential and cut off during winter and early spring. (National Environment Secretariat, 2000).

- *Mohlomo* – (Hyparrhenia hirta) a thatch grass area available for grazing at the end of winter.
- *Tlanyane* – (Eragrostic curvula) a grass that grows in marshy areas available for grazing from April to September.
- *Liremo* – a general term for plants used for thatching available in the winter. Wood gathering is also restricted in *liremo* areas.
- *Hloko* – (Elyonurus argenteus) a grass similar to *seboku* (Themida triandra), but not as palatable. *Hloko* areas are available for grazing in winter. The roots of hook are used by traditional doctors in medicines.
- *Lifate* – woodlots.
- Qokoa – (Hyparrhenia pilossosima) a thatch grass that can be grazed in the winter after it has been cut.
- *Seboku* – (Themeda triandra) grows in all three major ecological zones of Lesotho and is available for grazing in the summer.

4.6.3 Mafisa

Mafisa entails an arrangement between a specific stockowner and someone else (normally a relative or a friend) whereby the owner expects somebody else to attend to his or her flock of sheep. The owner, however, forfeits his/her right to the proceeds of that flock which goes to the person attending to the flock. The motivation for *mafisas* is normally the good management skills of the other person or his/her ability to access extra rangeland. (Shoup, 1987; Tsoanamatsie, 2003; Mafaesa, 2003).

4.6.4 Cattle Posts

Cattle posts are normally far away from local villages and high up in the mountains. In order to use the cattle post, stockowners are required to obtain a grazing permit that should be renewed annually during October. The person in charge of the livestock, mostly a herd boy,

should always be in possession of such a grazing permit. Grazing at the cattle post without a permit is illegal and fines are charged per head. Permits are obtainable after presenting the *"babeisi"* (proof of ownership). The permit system was heavily criticised by stockowners due to the administrative red tape involved in obtaining permits. Only the office of the Principal Chief issued permits and long delays were experienced (Shoup, 1987). Farmers preferred a more decentralised system of control whereby local leaders control issuing of *"babeisi"*. However *"babeisi"* receipt books are only obtainable from police stations and farmers regard this as a further barrier in the effective implementation of the system. Farmers also complained about malpractice by chiefs on the rangelands and reserved areas or *"maboellas"* (Shoup, 1987; Tsoanamatsie, 2003; Mafaesa, 2003).

4.6.5 The Range Management Area Program

Range management areas (RMAs) are those areas that are declared by the chief in conjunction with the VDC as areas of restricted use for members of a grazing association (GA) exclusively. Most often the GA will include all livestock owners under a village headman or a chief. Range management is controlled strictly and livestock will graze on a rotational basis within the range areas under the jurisdiction of that headman or chief. Rangelands within a RMA are normally divided into smaller portions to provide more flexibility and options for veld rotation (MEGY, 2000; Tsoanamatsie, 2003)).

The program currently implemented in Lesotho is designed as a vehicle for improving management of the mountainous communal rangelands, which comprise two thirds of the nation's land, thereby safeguarding the range resource base. The strategy is to identify and delimit land areas, which conform as closely as possible with the needs of resident livestock owners in a given locality, to restrict the use of these areas to resident livestock owners, to assist them in forming grazing associations responsible for range and livestock management in their area and to provide technical assistance required by the associations (Tsoanamatsie, 2003; Tuoanie, 2003).

A system of organised range management has been put into practice in the RMAs and studies on changes in rangeland productivity have shown significant improvements between 1983

and 1990. Range condition, species diversity and ground cover have improved, while the overall trend in range condition has been stable (Shoup, 1994). No evidence however, could be found that the impact of these strategies is still successful. The quality of rangelands in Lesotho today is in a very poor state.

4.6.6 Supplementary Feeding

As a result of the poor quality of rangelands, improvements in production because of better nutrition are possible only with supplementary feeding or intensive production methods. Without proper supplementary feeding programs or intensive stock production methods, other factors such as genetic improvement of the stock will not lead to dramatic increases either in quantity or quality of output.

Most of the farmers who participated in the RRA indicated that they use salt licks but very few of them make use of supplementary feeding. Natural grazing in Lesotho does not supply all the necessary nutrients throughout the year, especially during the cold winter months in the high sour-veld regions. Supplementary feeding and phosphate licks are needed to ensure proper feeding. Grazing at cattle posts and in the mountains is sufficient during the summer months from October to May, but serious food deficiencies exist during the months June, July, August and September. The most obvious way to address this problem is by means of a training program explaining the advantages of supplementary feeding. It is important that farmers find it easy to find affordable supplementary feeding once the training has been conducted.

Fodder production is seen as competing with crop production, which caters for human needs. The land tenure system, which allows for free grazing, does not encourage the production of fodder.

4.6.7 Training on Feeding Issues

Various policies and arrangements have been made in the past in an endeavour to utilise the rangelands according to proper veld management principles. Proper implementation, however, seems to be the problem and not the proposed utilisation principles and/or plans.

Farmers ignore the proposed arrangements and utilise grazing according to their own short-term needs and convenience. Unfortunately it seems that individuals in leadership positions often transgress their own policies and/or arrangements.

Seemingly the main reason for the lack of collaboration between farmers regarding the implementation of rangeland management principles is the lack of training and knowledge concerning veld management. What is of concern is that farmers indicated the need for training in veld management as very low on their priority list. Only 4% of farmers indicated that they received some training in rangeland management. This might be a reason why farmers regard veld management as unimportant. The importance of feeding as a primary production determinant is realised amongst all role-players. Yet it seems as though the extension officers have not really placed sufficient emphasis on veld management. An intensive veld management course must be developed to teach stockowners, caretakers and herd boys the importance of good grazing practices. Stockowners have to think of themselves as "*grass farmers*" in order to produce maximum output from their stock.

4.6.8 Grazing Fees

Introduction of grazing fees was proposed during the early nineties but was not introduced because stock farmers experienced it as discriminating against them (IFAD, 2000). Policy makers also rejected grazing levies in the past due to the fact that many chiefs and political leaders themselves own large amounts of stock and they felt that the introduction of grazing levies would cost them too much. This has been confirmed by some unquoted sources during the course of this study. Grazing fees proposed by the Livestock Policy Implementation Committee (1991) were as follows:

- Sheep and goats: 0.5 Maloti per head
- Cattle: 3 Maloti per head
- Equines: 5 Maloti per head

Some literature stated that grazing fees would not be effective as a de-stocking measure, which is true if it is considered on its own, but if implemented in combination with other measures it could serve as a de-stocking incentive (Hunter and Mokitimi, 1990). Local

farmer structures should play a bigger role and they should implement it in combination with other measures and link it to the dipping fee. Introduction of grazing levies will not only serve as a de-stocking measure but it will also be a source of income which will strengthen the dipping fee fund. Grazing levies should in fact substitute the present dipping fees, which are presently being deducted from wool proceeds. The benefit of this would be that farmers would pay dipping fees according to their stock numbers and not according to their production output. The current system is discriminating as it penalises the more efficient and productive farmers.

Another benefit of grazing levies is that stock farmers would actually start associating more animals with higher costs. This will encourage them to maximize the output per animal instead of increasing the number of animals. Society as a whole bears the cost of overgrazing and resource degradation, whereas stock farmers alone reap the benefits of rangeland utilisation. Grazing fees will force farmers to pay for the privilege of access to land. Successful implementation of grazing fees will encourage farmers to farm with higher quality and fewer animals, hence the grazing fee should be levied per animal. The advantage of producing the same output with fewer animals will also be easier to explain when grazing fees are in force. Introducing grazing fees may also become a major incentive for intensifying the livestock production i.e. by means of feedlots. This will improve both the livestock industry and the sustainability of range resources.

The impact of grazing levies would be as follows:

- Stock farmers would be exposed to the cost of natural grazing in order to encourage them to manage their stock according to financial principles.
- Stock farmers, who reap the benefits of rangeland utilization will also bears the cost of overgrazing and resource degradation.
- Successful implementation of grazing fees should encourage farmers to farm with higher quality and fewer animals, hence grazing fees ought to be calculated per animal. The advantage of producing the same output with fewer animals could be explained more easily with the introduction of grazing fees. Introduction of grazing fees could still serve as a major incentive for intensifying livestock

production and therefore improving both the livestock industry and the sustainability of range resources.

The new political dispensation in South Africa makes it easier for Lesotho farmers to trade with neighbouring farmers on the South African side and many Lesotho farmers bordering South Africa negotiate grazing rights from their South African counterparts. These farmers realised the advantage of good feeding and they are willing to pay grazing fees to South African farmers. In addition to grazing fees to South African landowners, Lesotho farmers have to apply for a permit at the cost of M10 per permit from the Department of Livestock Services at the Ministry of Agriculture. All these animals have to be vaccinated and dosed before being allowed into South Africa (IFAD, 2000).

One of the major implications of a grazing levy is the added administration fees entrenched in such a system and it should not be regarded as an extra income for government. Actions needed to implement grazing levies should involve the following:

- Decide which department will be responsible for administration. Range Management Associations could be given the responsibility of collecting the grazing fees.
- Develop administrative procedures.
- Decide on efficient levy amounts. Levies that are too low would not act as incentives to reduce stock and would make the administrative burden unfeasible. Levies that are too high would result in strong resistance from stockowners.
- Communicate with stockowners to explain the rationale behind such measures.
- Train personnel to manage the levy program.
- Update of national stock inventory.

It is imperative that the chiefs and leaders at village level support the levy program and that transparency regarding the use of the levies is maintained. Transparency of the fund means that stock farmers must have influence over the application and editing of the fund. The present dipping fee fund is paid into the central government's treasury and farmers do not know what amounts are applied to their direct advantage. The effectiveness of a grazing levy

would be enhanced by allocating a significant proportion of the amounts collected to improvement of the rangelands, rather than to the general treasury. Incentives to falsify livestock numbers and therefore evade fees will be reduced if stockowners know that the fees collected will be used to benefit everybody using the rangelands (themselves included) in the long run.

4.6.9 Fodder Production

Successful introduction of fodder crops would have several advantages to Basotho farmers and livestock producers and to the national economy in general. Among these benefits are providing animal feed in critical periods of the year (thus improving livestock productivity), reducing the rate of soil erosion, supplementing income from crop production, and saving the country considerable resources currently spent on importing fodder from the RSA.

In 1990, Lesotho imported a total of 2 800 tons of fodder with a total value of M1 23 million. It is estimated that this quantity of fodder could be grown in an area of 1 400 hectares in Lesotho. Environmental conditions in Lesotho are similar to those in the RSA, where the imported fodder is grown, and the RSA's fodder is exclusively produced on a dry land basis. Considering the large areas of land lying fallow each year, and the profitability of growing fodder in Lesotho, it is possible to increase fodder production.

4.7 THE ROLE OF HERD BOYS IN STOCK AND RANGELAND MANAGEMENT

Boys start looking after livestock when they are as young as seven years. Some herd boys will start looking after their parents' stock while others will be hired for looking after someone else's stock. Remuneration for herd boys is approximately one cow or 12 sheep per year. Those herd boys attending to their parents' livestock will sometimes be given an animal by their parents (*ho t'soaeloa*) (Hunter and Mokitimi, 1990; Mafaesa, 2003).

Shepherds play a very important role in the wool industry, yet very little has been done to train and assist them in rearing and guarding the flock of their employers. Shepherds are also exposed to high risks due to the fact that stock thieves are using more violent measures to attain their objectives (Kynoch and Ulicki, 2001; Mafaesa, 2003).

The important role played by shepherds or herd boys is generally underestimated and it can be summarised as follows:

- Herd boys provide security for livestock against theft, predators, and harsh weather conditions as well as during lambing periods.
- Shepherds are responsible for looking after the nutritional requirements of the animals they attend to. They are responsible for seeking better grazing pastures if needed and make sure the animals are feeding on pastures allocated to them. Sometimes herd boys are so dedicated to their task that they try to graze the reserved areas (*maboella*). Herd boys are also responsible for gathering wild fodder and other greens for supplementary feeding, especially for old, pregnant or lactating animals or those with injuries or sickness. They are the ones who, in many cases, exert pressure on stockowners to buy salt and licks for the animals.
- Herd boys are the ones monitoring the veld quality and rotating animals on the pastures to ensure enough grass for the animals. Normally herd boys disclose intimate knowledge of the veld and rotate animals out of practical experience without any theoretical background of veld management.
- Herd boys attend to their animals 24 hours per day, seven days a week and are therefore the first to identify symptoms of illness. Grazing abnormalities and symptoms of illness are identified promptly and if guided correctly, natural herbs are used in many cases to cure the animals:
    - It is common practice for them to gather wild herbs and prepare it for the animal and do the actual dosing *(ho noesa)* of a sick animals,
    - some of the herd boys are trained to vaccinate the animals,
    - open wounds and snakebites are also treated by herd boys by means of natural herbs,
    - herd boys can also treat internal parasites by using traditional herbs,
    - in most cases dipping is actually done by the shepherds.
- Herd boys are responsible, not only for prevention of stock theft and diseases, but also for the total management of their flocks, including:
    - The responsibility of ensuring that correct breeding practices are applied.

- It is the herd boy who must ensure that good quality animals and low quality animals do not mix and that the correct ram designated for a specific group of ewes are mating according to the owners' breeding plan.
- Herd boys sometimes negotiate amongst themselves for the services of a superior quality ram for their ewes. Although this may not have the approval of a specific owner, it usually has a positive impact on the breeding programs of the owners of inferior rams.
- They are aware that inbreeding decreases productivity and they try to control it where possible.
- It is possible for them to identify animals ready for mating. Their satisfaction is mostly derived from good looking and healthy animals

- Herd boys play an important role during lambing seasons. They are normally devoted to their work and will often share a room with the lambs in trouble during harsh weather conditions. They offer assistance to those animals, which might suffer from dystokia when giving birth (lambing). Most of them, even though they do not have the necessary theoretical background or training, know that the lamb must get colostrum in first few hours after birth. They also worry if the afterbirth is retained in the body and this will be reported to the owner and some form of medication applied to treat the animal concerned.
- Activities such as shearing and transporting products to traders are conducted by herd boys. Stockowners making use of the shearing shed system use herd boys to drive animals to the shearing sheds and assist with dipping activities.
- Herd boys castrate, dock, earmark and have a significant influence on culling. Even when *lobola* is paid, they influence the owners' decision regarding the choice of animals to remove from the stock, according to their performance.
- They can recognise which animals are missing even without counting them. They have familiarised themselves with most of the animals to such an extent that they will know exactly where to search if animals are missing.

The more experienced herd boys are found at the cattle posts where they are alone and far away from the villages for long periods of time. They mostly gained their knowledge from other, older herd boys and from practical experience.

Training and extension programmes are not focused on herd boys, yet they are the ones who can play a decisive role in the productivity of the sheep flocks in Lesotho. The Ministry of Agriculture should develop an extension program with the aim of equipping the herd boys with basic knowledge. Innovative ideas such as the introduction of a competition amongst herd boys to determine the herd boy with the best lamb to ewe ratio comes to mind.

4.8 EXTENSION SERVICES

One of the major challenges facing extension services is to reward extension officers and other field personnel working in remote areas properly. Many young and qualified extension officers do not want to work in remote areas but prefer to work near bigger towns such as Maseru. This causes an outflow of qualified personnel to towns in Lesotho or to South Africa where salaries are much better. The Lesotho government should seriously address this issue by means of better remuneration packages, or benefits such as housing etc.

Much is expected from extension officers but their services can be more efficient if the Department of Field Services coordinates extension efforts with the introduction of a scientifically developed extension program, rather than with *ad hoc* efforts. Although the radio and other communication mediums are used to transfer some market information, it is still uncoordinated and not intensive enough to deliver the desired impact of transferring knowledge needed to improve production.

According to the RRA results, shearing shed farmers are much better trained than farmers not using the shearing shed system. More than 70% the shearing shed respondents indicated that they received training in disease management (83%), animal judging (73%), feeding (73%), and small stock reproduction (71%) (Table 5.12). 46% of shearing shed farmers indicated that they received training in wool sorting, financial management and classing standards. Only 4 % of these farmers were trained in rangeland management.

Non-shearing shed farmers are not exposed to the same level of training and only 8% of them indicated that they received some training, as indicated in Table 4.12. This is an alarming situation especially if taking into account that this group of farmers are responsible for 28% of the national wool production.

Table 4.12: Training received by farmers

Training subject	Shearing shed farmers % of respondents (n = 86)	Non-shearing shed farmers % of respondents (n = 24)
Disease management	83%	8.3%
Animal judging	73%	8.3%
Feeding	73%	8.3%
Small stock reproduction	71%	8.3%
Wool/mohair sorting	46%	4.2%
Financial management	46%	0%
Facilities and standards	40%	4.2%
Marketing	29%	4.2%
Range management	4%	0%

Table 4.12 clearly illustrates that extension programs focused on disease management, animal judging, feeding and reproduction in contrast to veld or rangeland management, which is the basis of animal feeding. It is not clear why training in rangeland management are neglected by the extension services, if one considers the fact that the lack of proper feeding is one of the root causes of poor production. Extension services in Lesotho should focus on Rangeland management to ensure the sustainable use of the rangelands and to increase production.

Table 4.13 clearly shows that farmers do not regard financial management, rangeland management and animal feeding as important training needs. The research shows that improper feeding is one of the biggest causes of low production and the perceptions of farmers regarding their training needs are in complete contrast to what the research regard as important. Veld management for instance, is only prioritised as sixth on the list of training needs. The explanation for this could be that extension programs in the past did not focus on issues such as veld management and thereby created a perception amongst farmers that it is not that important. Alternatively, this is an indication of the lack of knowledge amongst producers regarding the importance of veld as a production input.

Table 4.13: Training needs of farmers

Training	Shearing shed farmers		Non-shearing shed farmers	
	Priority	Weight	Priority	Weight
Wool sorting	1	44	2	4.9
Disease management	2	35	1	5
Reproduction	3	28	3	4.7
Animal judging	4	23	3	4.7
Feeding	5	22	6	1.5
Veld management	6	9.7	7	0.1
Financial management	7	9.5	5	2.2

One can also conclude that farmers accept the *status quo* with regard to the quality of rangelands and do not realise that it can be improved by means of proper management. However, this is an extension problem. It is necessary that extension programs shift their focus to veld management, even though the need for veld management training is low on farmers' priority list. Financial management training is also very low on all the respondents' priority lists and it was clear during completion of the questionnaires that financial management skills are totally lacking. Few farmers were able to supply any correct information regarding financial results of their production systems. The financial data they supplied did not correspond to production figures and stock numbers in the majority of the cases. Very few farmers could indeed supply any information because most of them make use of cash transactions.

In addition to training, extension officers could organise study groups of 5 to 25 farmers with the shearing sheds as a base and explore the following together:

- How does the wool quality of Lesotho farmers compare to that of other farmers at the auctions?
- How can farmers improve the quality of their produce?
- What premiums can be received for producing good quality wool?
- How could the profitability of wool production be enhanced?
- Provide small-scale farmers with a marketing strategy to obtain the best prices for their product. Use real price examples to demonstrate the advantages of selling directly on the international auction.

- Gather market information on a continuous basis.
- Identify trustworthy wool buyers in the region if farmers are too far from shearing sheds and bring farmers in touch with these buyers.
- Organise wool shearing and classing training days.
- Use the current shearing sheds as a basis from which to distribute important information to farmers.
- Help farmers to obtain access to shearing sheds.
- Motivate and train farmers to create, join and manage producer organisations and/or cooperatives.

The extension officer could also explore ways of adding value to wool by means of small business enterprises. This entails finding out what market opportunities exist, what equipment suitable for small-scale value adding processes is needed, where such equipment could be purchased, and what technical knowledge is needed for cleaning and spinning of wool.

Since many of the recipients of the training are illiterate, tailor-made extension programs should be developed to make it accessible to all farmers. Other topics to be included in the extension program should include:

- Importance of proper feeding in health management;
- influence of internal and external parasites on animal production;
- identification of internal and external parasites; and
- identification symptoms of some of the most important diseases.

The following are some important aspects that could be included in a veld management course:

- Basic knowledge of the different grasses;
- Veld classification;
- growing cycle and potential of different grasses;
- principles and effects of different garzing methods;

- effect of veld fires;
- veld fire management;
- nutritional value of various grasses; and
- carrying capacity of veld.

Training should be provided not only to stockowners but also to herd boys. Stockowners should be targeted before the herdboys to convince them about the importance of veld management and the imortant role of the herdboys in this. Further training with regard to feeding should focus on the advantages of supplementary feeding and licks, especially phosphate licks during the summer and energy licks during the winter months. It is important for extension officers to point out the cost benefits of a proper feeding program.

4.9 CONCLUSION

The wool commodity system in Lesotho is faced with a major challenge regarding the sustainable production of wool. The number of productive units (sheep) as well as the output per unit has shown a dramatic decrease during the past forty years and the downward trend is still continuing. Problems such as low reproduction rates, poor feeding conditions and stock losses are at the core of the problem.

The difference in terms of training, size of flocks and output levels between the shearing shed farmers and non-shearing shed farmers is quite significant. Shearing shed farmers are far better informed and better trained and they make much more use of services and technology than the non-shearing shed farmers. Shearing shed farmers have on average twice the number of animals than the non-shearing shed farmers and their efficiency and productivity levels are also much higher.

Proper feeding seems to be the major obstacle toward higher production rates. The rangelands in Lesotho are in a very poor condition irrespective of scientifically founded management policies and plans. It seems however, that very few of these are implemented on grassroots level. This pose a serious challenge to the extension services who hold the key to supply the necessary training to stockowners as well as herders.

This chapter dissected the wool production system, identified points for concern and made certain recommendations to address these challenges. The results discussed in this chapter indicate toward an inefficient system that is not sustainable with potentially harmfull effects on the environment and on the growth potential of the country. If not addressed adequately, the wool system can become an encumbrance instead of an engine of growth for the Lesotho economy.

CHAPTER 5

TRADE AND MARKETING OF WOOL

5.1 HISTORICAL BACKGROUND

Marketing structures for wool were very competitive during the late 1800s, with many small traders and itinerant hawkers competing for business with farmers. The trading structure became more formalised after the gun-wars between the Basuto and the colonial administration, when many hawkers and traders fled the country. In 1920, Frazers owned 46 percent of trading stations in the three most populated lowland districts. Other traders also owned trading stations and a pattern developed according to which specific traders dominated particular areas. During the 1980s, Frazers held about one third of the total number of licences for trade in wool and mohair (Hunter and Mokitimi, 1990).

Hawkers and itinerant traders offered little competition for big traders, mainly because of transport constraints. Hawkers and small traders operated mostly in remote areas where they invariably bought and sold small lots of merchandise. During the first few decades of the 20th century there were four times as many licensed hawkers as traders. Capital requirements for hawking were relatively low compared with those for traders, but profits were also lower. Since the 1980s, the authorities attempted to exert better control over the classing of fleeces. Hawking deteriorated as a result of hawkers being forbidden to trade in wool (Mokitimi, 1988; Hunter and Mokitimi, 1990).

Before independence, Lesotho's wool marketing system was dominated by the private sector, in contrast to a government-dominated system in the post-independence era. The pre-independence era was characterised by dual trading, a situation that exists when a trader has a relative monopsony in the purchase of agricultural produce from farmers and a relative monopoly in the sale of consumer goods to farmers (Hunter and Mokitimi, 1990). Traders did not normally exploit their position of monopsony in purchasing wool, because the prices

paid to them were relatively market-related. However, with the aid of high sales receipts, they took advantage of their monopolistic position to extract higher profits from the sale of consumer goods. Government attempted to reform the marketing structure, but failed because they did not take account of the duo-trading structure and assumed that only a monopsonic position prevailed. As a result, traders' returns increased even further (Hunter and Mokitimi, 1990).

Factors that contributed to this situation were mainly transport and the availability of capital. Due to the mountainous terrain and a poor road infrastructure, transport was difficult and costly and consequently farmers could not negotiate for better prices. Farmers often had to sell their produce to the only buyer visiting the farm or to the trader if he/she sheared his/her sheep at the traders' station. The capital requirements of and high risk attached to the business also eliminated competition from small traders and hawkers, because storage and classing facilities had to be provided by the traders (Mokitimi, 1988).

Traders also pursued "rent seeking" constraints by means of restrictive licensing. The Basutoland Traders' Association (BTA) was founded in 1890 to lobby with government on the traders' behalf. It sought to limit the entry of Indian traders into the business, fearing unfair competition as a result of the allegedly smaller Indian trading margins. The BTA also sought to restrict the number of licences granted per locality and to limit the number of new entrants to the industry. The BTA was very successful in its lobbying with the authorities and succeeded in convincing government to act against traders who provided "unfair competition" and who were guilty of "overtrading". As a result, strict limits were set with regard to the number of trading locations in certain centres. Basuto and Indian traders were often denied licences in these areas and only granted licences in less desirable rural localities (Stutley, 1960; Hunter and Mokitimi, 1990).

Traders adopted trading practices that limited competition such as, *inter alia,* the provision of credit against commodity sales, payment with scripts and the use of touts to encourage producers to deal with a particular trader (Stutley, 1960; Hunter and Mokitimi, 1990).

A widespread negative perception was created amongst farmers that traders were taking advantage of them. As a result of a request from the Catholic Church during the 1950s, government started to encourage the formation of co-operative societies to serve as competition for the traders (Stutley, 1960). Most of these co-operative societies ceased to exist during the 1960s due to mismanagement and financial problems. Fourteen co-operatives had been formed by 1988, but they never handled more than 10 percent of the clip. Traders strongly opposed the formation of these co-operative societies and sometimes practised predatory pricing in opposition to them. However, this was not the reason for their abolishment (Biggs, 1964; Hunter and Mokitimi, 1990).

During the 1980s, government had to respond to demands from the Basuto people that the Basuto should receive preferential treatment with regard to trade licensing and that no new licences should be issued to non-Basuto people. By 1988, however, only 14 out of 215 general trading licences were held by Basuto (Hunter and Mokitimi, 1990).

Government restricted the number of licences greatly after independence in 1966 and responded to stockholders' complaints about the marketing and trading structures for wool by means of some institutional reforms. In 1973 the Livestock Marketing Corporation (LMC) was established as a parastatal organisation aimed at buying wool via government-established shearing sheds in competition with private buyers. The venture was unsuccessful due to under-capitalisation, a lack of personnel and transport, and poor management. The prices paid during this period were sometimes lower than the South African prices and large quantities of wool remained unsold. As a result, many farmers bypassed official channels, while others slaughtered many of their animals (Hunter and Mokitimi, 1990).

During April 1979 the Livestock and Livestock Products Marketing Services (LPMS), at that time under the auspices of the Ministry of Agriculture, took over the activities of (Livestock Marketing Council (LMC) and the Livestock Marketing Institute (LMI). LPMS acted as a marketing agent for farmers shearing at government woolsheds but they did not take possession of the wool clip. They were able to overcome serious challenges and achieved a high degree of acceptance amongst farmers in recent years. In addition they also take responsibility for the licensing of private traders, the maintenance of classing standards, the

training of classers, the inspection of scales, the determination of the prices and margins of traders and making administrative arrangements for the wool clip marketed via government woolsheds (Hunter and Mokitimi, 1990; Tsoanamatsie, 2003).

Government intervention during the 1970s resulted in a dualistic shearing and trade pattern, with farmers with disproportionately large flocks tending to shear at government woolsheds, as a variety of implicit government subsidies augmented their wool incomes. Smaller farmers tended to sell to traders as they balanced relatively lower incomes against the advantage of receiving cash on delivery for their produce (Hunter and Mokitimi, 1990).

Since the beginning of the LPMS era, and especially since the establishment of the government woolshed system, the woolsheds have became the backbone of the wool industry in the country and very few arguments can be brought against the basic objectives of this system. The National Wool-growers' Association in South Africa (NWGA) and authorities in South Africa realised the advantages of such a system for developing areas and therefore successfully introduced a similar system in the rural areas of the Eastern Cape (formerly Transkei). Currently the woolsheds in Lesotho are under the management of the Ministry of Agriculture through its field services and LPMS are responsible for handling the clip. (MOA, 2002).

A one-channel marketing system was instituted in South Africa in 1971, according to which all South African wool had to be marketed via the South African Wool Board with BKB acting as its sole broker. All wool was pooled and sold by means of a dual-payment system (*advance payments*) which meant that farmers received advance payments and final payments only after the marketing of the total national clip. This permitted all growers to share equally in high and low prices, regardless of when their fleeces were sold. A stabilisation fund, financed by levies on growers, effectively established a floor price for sales. Lesotho farmers also made use of the South African marketing structure at the time and thereby benefited from the floor price system. In addition, Lesotho became eligible for EEC STABEX assistance should its export earnings from wool fall below an agreed multi-year average. STABEX support was paid out to Lesotho in 1980, 1981, 1982 and 1987 (Hunter and Mokitimi, 1990).

5.2 THE GLOBAL WOOL MARKETS

Europe is the major market for wool. The European consumer is very quality conscious and international standards were developed for wool to guarantee the necessary quality. The eco-labelling of wool and wool products receive little attention at this stage due to the presence of the wool mark as a symbol of quality.

5.2.1 Demand and supply patterns of wool

The world's wool industry and markets are characterised by a number of basic features (Cape Wools, 2003):

- Wool consumption as a percentage of total fibre consumption is small and decreasing;
- the consumption of wool products is mainly concentrated within developed countries;
- the price of wool is high when compared to other fibres;
- the image of wool products is upmarket and high quality; and
- textile and consumer markets treat wool as a fibre that is associated with luxury and naturalness. Wool products are therefore heavily dependent on fashion trends, as well as on consumer retail spending in the developed world.

Wools in southern Africa are traded either through the auction system or by private treaty. Most of the clip is marketed overseas through members of the South African Wool and Mohair Buyers Association (SAWAMBA). Only registered members of the organisation are allowed to bid at auctions held under the auspices of the South African Wool Exchange (SAWE). The largest percentage of the clip is sold through the auction system. Auctions have been centralised in Port Elizabeth and take place once a week during the season (August to June). Even though centrally auctioned (i.e. sale by separation), wools are warehoused in three of the major ports, *viz* Port Elizabeth, Cape Town and Durban. Prices paid for Cape wools are determined by free market supply and demand forces and are closely linked to the international price for apparel wool, which is determined by the Australian market.

Developed countries are the biggest users of wool and consequently 75% of the southern African clip is exported to the European Union with 20% to Asia and 5% to the United States respectively. Southern Africa (Lesotho and South Africa) produces only 3% of the total world production, with Lesotho only contributing 3% of the production in southern Africa (Cape Wools, 2003).

5.2.2 Dumping and shipping

South African ports are situated conveniently on one of the major shipping lanes between East and West. High-density presses (dumps) are used at all three ports of discharge. These dumps allow for compressing bales into a third of their original size, making it possible to pack 96 bales into a 6 m^3 container. The average bale mass is 150 kg and dumping is carried out on a pre-sale basis.

All greasy and semi-processed wool destined for the export market is containerised. Cape Town, Port Elizabeth and Durban are served by an efficient container shipping service to Europe, America and the Far East. Average transit time to Europe is 17-19 days, to the Far East 20-30 days, and to the US 30-35 days.

5.2.3 Price Formation in Wool

Free market demand determines local prices paid for wool. These are closely linked to international prices which is mainly determined by the Australian market. The exchange rate obviously is an important price determinant in terms of the Maluti that is linked to the ZAR Rand.

Wool is on average more than three times more expensive than commodity fibres like cotton. Since wool competes with other fibres in the market, the relative price ratio between wool and artificial fibres has a direct influence on the consumption of wool. Sales of wool depend on the price ratios between wool and cotton and wool and artificial fibres. If one kg of wool buys more than 3 kg of cotton or artificial fibre then demand for wool tends to go down (Cape Wools, 2002). Wool buyers are very quality conscious due to the direct influence of

wool properties on the processing of wool and the following section deals with some of the major properties influencing wool prices.

5.3 PROBLEM CONCEPTUALISATION OF THE WOOL TRADE AND MARKETING SYSTEM

A problem conceptualisation of the wool trade and marketing challenges is illustrated in Figure 5.1.

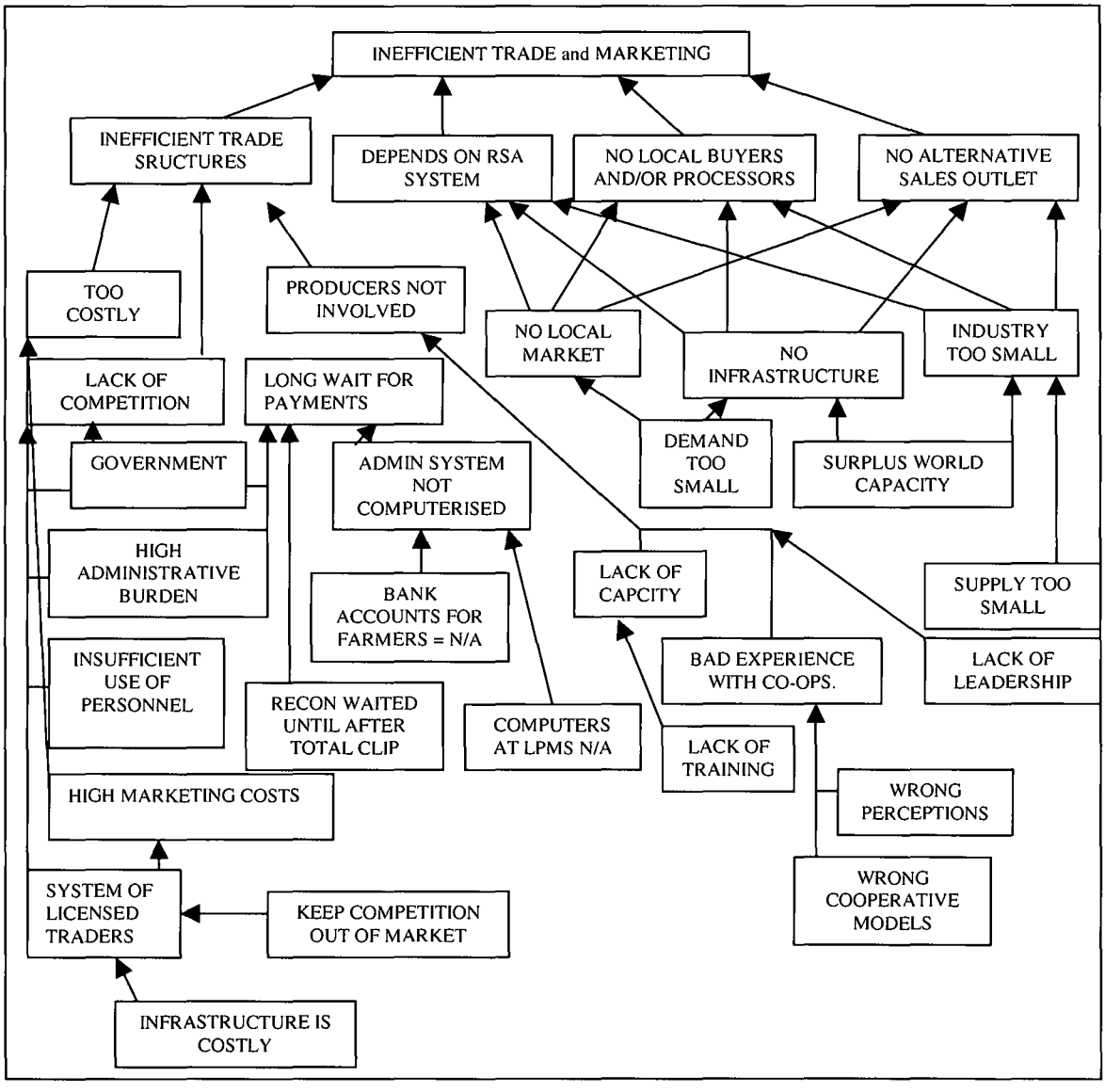

Figure 5.1: Problem conceptualisation, indicating possible factors that may impact on the trading and marketing of wool in Lesotho.

Part of this study is based on the hypothesis that the trade and marketing system in Lesotho is insufficient. The interrelation between the different causal factors toward inefficiency is clearly illustrated in Figure 5.1.

The problem conceptualisation clearly shows that the challenge to improve the trade and marketing system is not a simplistic challenge with only one solution. Evaluation of all the contributing factors shows that improvement in the trade and marketing system depends largely on strategies that will address institutional, administrative and managerial arrangements. The problem conceptualisation also illustrates the importance of good leadership and training programs that is needed for efficient management of institutions. Most of the causal factors illustrated in Figure 5.1 will be discussed in this chapter to determine and show its relative contribution toward efficiency or inefficiency of the wool trade and marketing system in Lesotho.

5.4 WOOL VOLUMES AND TRENDS

Combined wool and mohair sales have provided Lesotho with its largest export earnings since the 1940s. However, as shown in Figure 5.2, the exports of wool declined until 1984, when it started to stabilise.

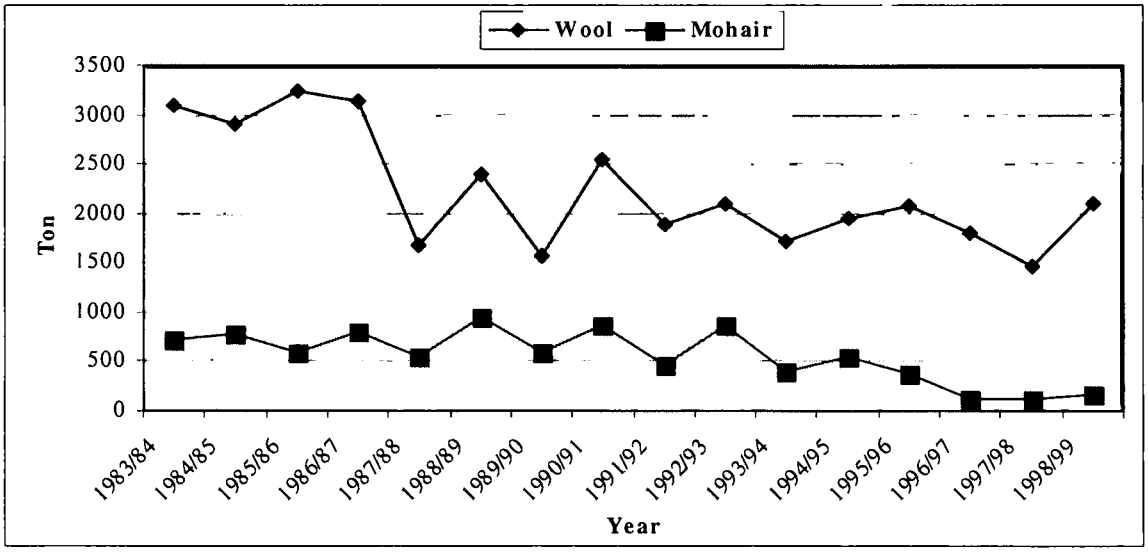

Figure 5.2: Wool and mohair production in Lesotho (1983/84 - 1999/2001) (BOS, 2001)

Figure 5.2 represents wool and mohair exports since 1983. It is interesting to note that mohair exports remained constant until 1996, whereas the decline in wool exports developed much more dramatically

Variation in total national wool production is large due to the variation in wool production amongst the non-shearing shed farmers. The contribution of the wool produced at the shearing shed and non-shearing shed systems towards the national production is illustrated in Figure 5.3.

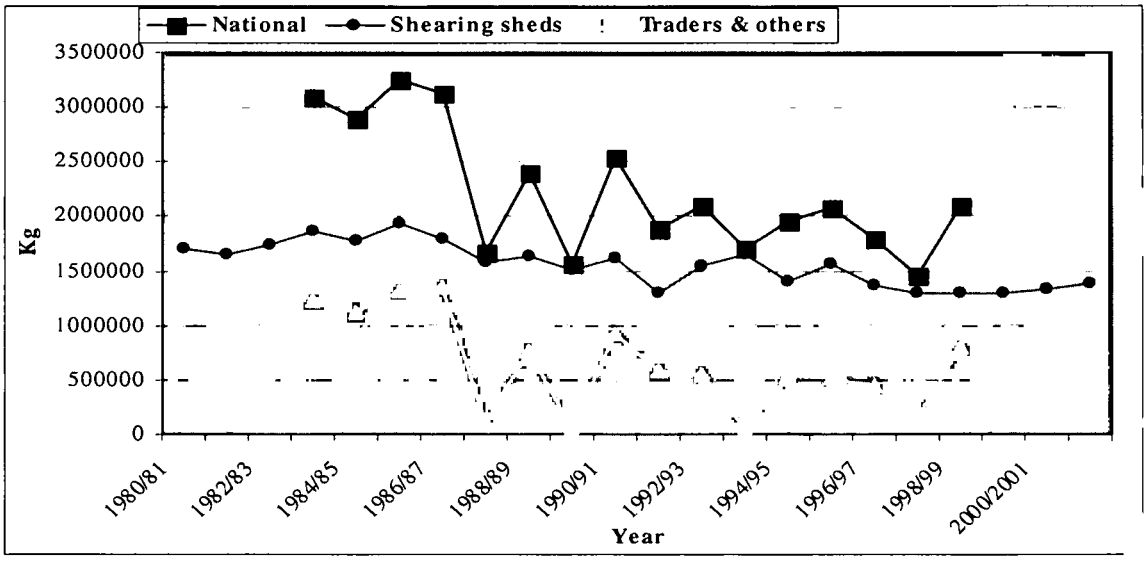

Figure 5.3: Total wool production at the shearing shed and non-shearing shed systems (1980–2002)

5.5 MARKETING CHANNELS

No real changes have taken place in the wool marketing system in Lesotho since the deregulation of agriculture in neighbouring South Africa. It is still a government-driven system that is managed by LPMS and operates by means of 98 shearing sheds on the one hand and a few licensed and unlicensed traders operating privately on the other hand.

A matter of grave concern to government is the unofficial and illegal outlets or the "smugglers" who trade without licences. The bulk of the wool clip is traded via the government woolsheds and traders lose business as a result of competition from both the

woolsheds and "smugglers". It seems that each of these outlets serves a specific kind of producer with specific needs.

5.5.1 Shearing Sheds

The 98 shearing sheds supplied by Lesotho's government for wool farmers can be regarded as the backbone of the industry because of the services rendered by these sheds and the infrastructure available to the farmers. The importance of this structure is illustrated by the fact that 72% of the total national wool clip is marketed via the woolsheds. Table 5.1 indicates volumes traded via the woolsheds over the past 20 years in comparison to the national production.

Table 5.1: Wool exports from shearing sheds in comparison to national exports (1981-2002)

Year	National exports (kg)	Exports via shearing sheds (kg)	Difference: Exports via traders and smugglers (kg)
1980/81	N/A	1 705 044	-
1981/82	N/A	1 644 713	-
1982/83	N/A	1 746 075	-
1983/84	3 088 148	1 860 941	1 227 207
1984/85	2 902 198	1 780 346	1 121 849
1985/86	3 242 651	1 934 845	1 307 806
1986/87	3 134 870	1 791 807	1 343 063
1987/88	1 671 440	1 572 360	99 080
1988/89	2 402 107	1 634 937	767 170
1989/90	1 569 107	1 518 048	51 059
1990/91	2 544 040	1 621 060	922 980
1991/92	1 882 716	1 288 658	594 058
1992/93	2 090 076	1 545 523	544 553
1993/94	1 710 064	1 649 826	60 538
1994/98	1 985 167	1 407 862	547 305
1998/96	2 082 534	1 570 432	512 102
1996/97	1 801 618	1 365 023	436 598
1997/98	1 462 284	1 300 972	161 312
1998/99	2 091 360	1 288 601	802 758
1999/00	N/A	1 301 654	-
2000/01	N/A	1 327 455	-
2001/02	N/A	1 386 226	-

Source: Bureau of Statistics (2001); BKB (2003)

It is clear from data supplied in Table 5.1 that the amount of wool produced varies dramatically from year to year. Quantities of wool sheared at the shearing sheds are much more consistent without the huge fluctuation in volumes experienced by traders. However, reliable data on national production for the periods 1981 to 1983 and 2000 to 2002 could not be obtained.

Table 5.2 reflects the export earnings via the shearing sheds and otherwise for the past twenty years. Reliable data on national earnings for the periods 1981 to 1983 and 2000 to 2002 could not be obtained. A huge increase in earnings at the shearing sheds is evident since the 2002 season. Shearing shed earnings nearly doubled from M19,301,311 during the 2001 season to M32,044,368 for the 2002 season. This represents an increase of 69% in earnings.

Table 5.2: Gross export earnings for wool marketed in Lesotho (1981-2002)

Year	Shearing shed gross exports (Maluti)	National gross exports (Maluti)	Exports via alternative channels (M)
1980/81	2 710 103	N/A	-
1981/82	3 040 772	N/A	-
1982/83	3 180 012	N/A	-
1983/84	4 111 892	5 624 406	1 512 514
1984/85	5 970 873	6 109 863	138 990
1985/86	6 814 115	7 533 433	719 318
1986/87	8 359 479	14 819 346	6 459 867
1987/88	16 998 839	17 854 167	855 328
1988/89	16 045 189	23 789 800	7 744 611
1989/90	12 708 374	13 241 374	533 000
1990/91	11 161 149	27 936 358	16 775 209
1991/92	7 932 775	11 098 390	3 165 615
1992/93	6 682 233	8 571 293	1 889 060
1993/94	11 037 760	12 371 839	1 334 079
1994/98	15 790 913	20 200 054	4 409 141
1998/96	12 040 596	16 287 155	4 246 559
1996/97	15 317 164	20 626 729	5 309 565
1997/98	14 357 933	15 180 514	822 581
1998/99	10 432 265	14 568 874	4 136 609
1999/00	14 094 388	N/A	-
2000/01	19 301 311	N/A	-
2001/2002	32 044 368	N/A	-

Source: Bureau of Statistics (2001); BKB (2003)

Wool export earnings are very volatile, but a steady increase is evident from Figure 5.4, with a dramatic increase in export earnings since 2001. The drastic increase in wool prices from 2001 onwards was the direct result of good international wool prices and the dramatic fall of the ZAR Rand against the US$. Data for the non-shearing shed farmers and total national clip were not available from 2001.

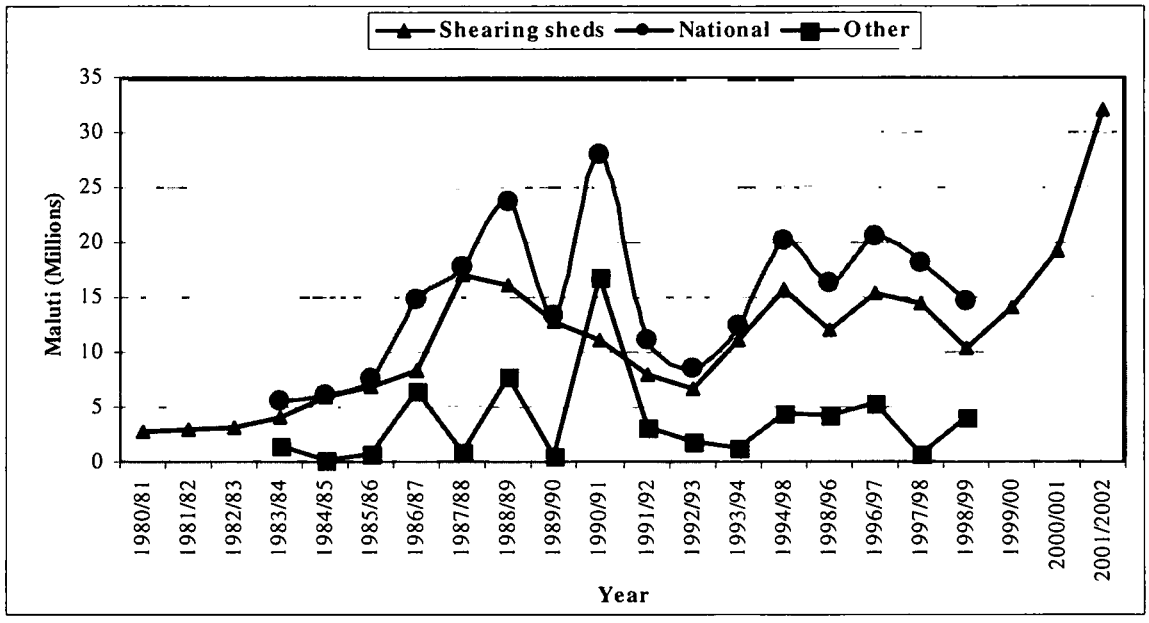

Figure 5.4: Wool foreign earnings (1983/84 - 1999/2003) (BOS, 2001; LPMS, 2003)

The average wool prices per kg for both shearing sheds and other sources are shown in Table 5.4. The inconsistency and huge variation in prices from year to year for non-shearing shed wool are evident from these figures. The variation in average per kg prices as a percentage of shearing shed wool ranges from 4% to 331%. If one disregards the four years during which the highest deviation from the mean occurred (1984/85, 1985/86, 1990/91 and 1993/94), the variation is still very high (from 46% to 125%). The most obvious explanation for this could be errors in the data made available by the Department of Statistics and LPMS. Since licensed traders have to declare exports and earnings themselves, one also tends to believe that all their exports and earnings are not properly declared. This could indicate a lack of proper mechanisms to control exports and export earnings effectively. Inaccurate record-keeping or false declarations by traders with regard to exports and trade could contribute to the obvious inconsistency in the data.

Table 5.3: Comparison of average per kg prices for RSA Merino wool, Lesotho shearing shed and non-shearing shed wool (1984-2002)

Year	Average export price for RSA Merino wool (R per kg)	Average export price for shearing shed wool (M per kg)	Average exports price for non-shearing shed wool (M per kg)[1]	Difference in price of shearing shed wool as a % of RSA wool prices	Difference in price of non-shearing shed wool as a % of shearing shed wool prices
1983/84	3.22	2.21	1.23	69%	56%
1984/85	4.61	3.35	0.12	73%	4%
1985/86	5.19	3.52	0.55	68%	16%
1986/87	5.35	4.67	4.81	87%	103%
1987/88	9.40	10.81	8.63	115%	80%
1988/89	12.01	9.81	10.10	82%	103%
1989/90	10.17	8.37	10.44	82%	125%
1990/91	7.01	6.89	18.18	98%	264%
1991/92	7.58	6.16	5.33	81%	87%
1992/93	6.35	4.32	3.47	68%	80%
1993/94	6.84	6.69	22.15	98%	331%
1994/98	12.01	11.22	8.06	93%	72%
1998/96	10.02	7.67	8.29	77%	108%
1996/97	12.70	11.22	12.16	88%	108%
1997/98	13.21	11.04	5.10	84%	46%
1998/99	10.46	8.10	5.15	77%	64%
1999/00	12.50	10.83	N/A	87%	
2000/01	15.60	14.54	N/A	93%	
2001/02	24.12	23.12	N/A	96%	

Source: Dept of Statistics, RSA, 2003; Bureau of Statistics (2003); BKB (2003)

Also shown in Table 5.3 are the average prices for RSA merino wool, as well as the difference in shearing shed wool prices expressed as a percentage of RSA Merino wool prices. According to the data collected over the past 20 years, the average price difference between the Lesotho shearing shed wool clip and South African Merino wool clip equals 17% (Lesotho prices are 17% lower than RSA prices). The comparison is made only with regard to the shearing shed wool clip in Lesotho since only Merino wool is sheared at the shearing sheds. Figure 5.5 shows the trend of Merino wool prices in South Africa and Lesotho for the period 1983 to 2002.

[1] The price that the Traders receive for non-shearing shed wool at the South African auction

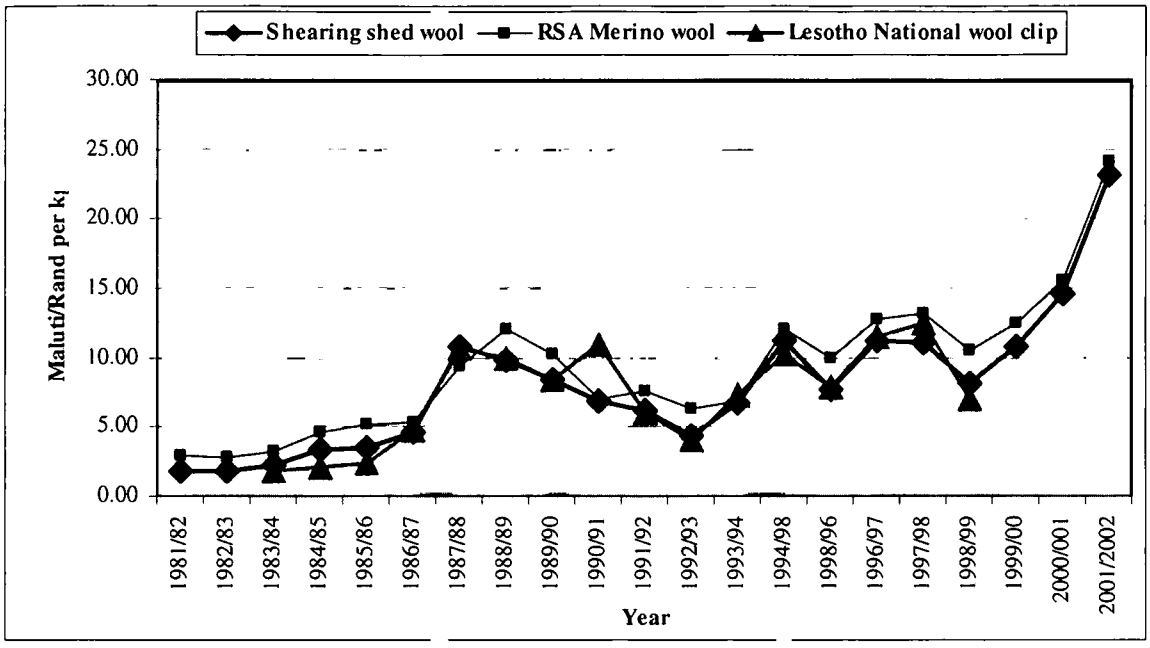

Figure 5.5: Merino wool prices per kg in South Africa and Lesotho (1983 - 2002) (Dept. Statistics, RSA, 2003; BOS, 2003; BKB, 2003)

The average real price per kg wool at the shearing sheds since 1982 (20 years) is M12.72 (constant 2004 values). The average real price for the past ten years (1992 – 2002) is lower at only M11.50. Fig 5.5 clearly shows the dramatic increase in wool prices during 2002. Calculation of real prices at 2004 constant values shows that the real wool price for 2002 was M13.33. This is in actual fact only 50 cents higher than the average real price realised over the past 20 years. The increase in prices during 2002 is therefore the result of the poor performance of the Maluti (which is pegged to the Rand) against the US Dollar.

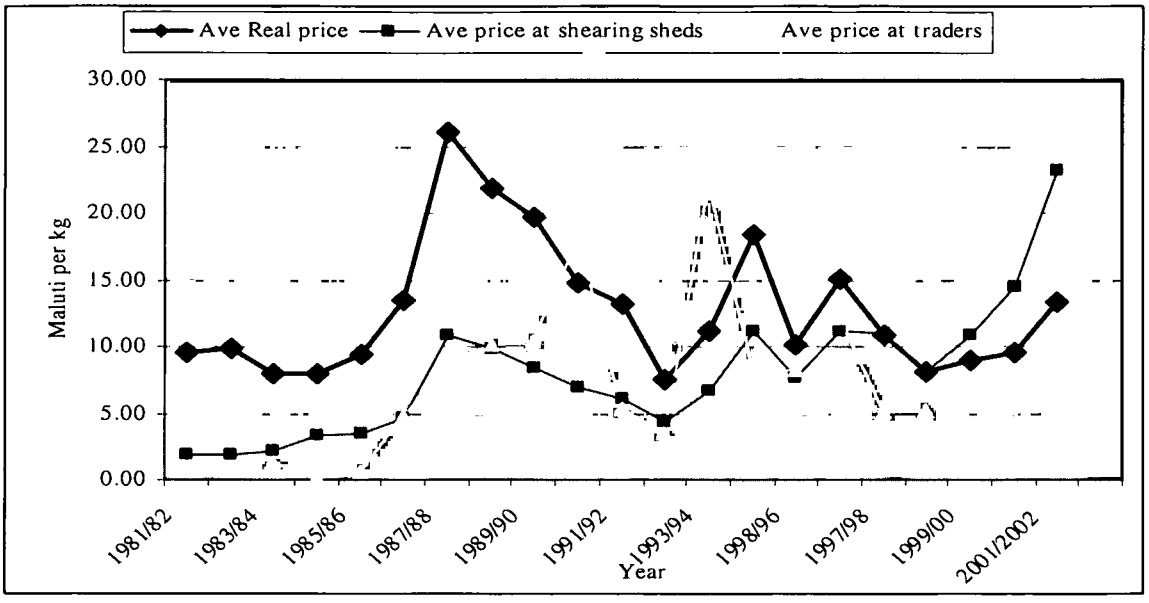

Figure 5.6: Comparison of real and nominal export prices for wool in Maluti per kg (1982-2002)

Calculation of the real prices (Fig 5.6) shows that wool prices reached a high during the 1988 season, followed by another peak during 1995, but have varied between M8.00 to M13.31 since then. The large variation in the prices for non-shearing shed wool is also very clear from Figure 5.6.

Nearly all the shearing sheds are located near main roads with easy access to and from the roads. Because of the poor road network in the northern, eastern and central parts of Lesotho, vast areas in these specific locations are not properly served with shearing sheds. Figure 5.7 shows locations of the 98 government-owned shearing sheds in Lesotho. The 98 shearing sheds are spread all over the country at strategic places as indicated on Figure 5.7.

A list of all the shearing sheds with its associated wool-growers' is included in Appendix A. The numbers in column one of Table A.1 in Appendix A refers to the locations for the shearing sheds as indicated in Figure 5.7. It is also shown in Table A.1 that more than one Wool-growers' Association (WGA) and/or Mohair Growers' Association (MG) are attached to some of the individual shearing sheds.

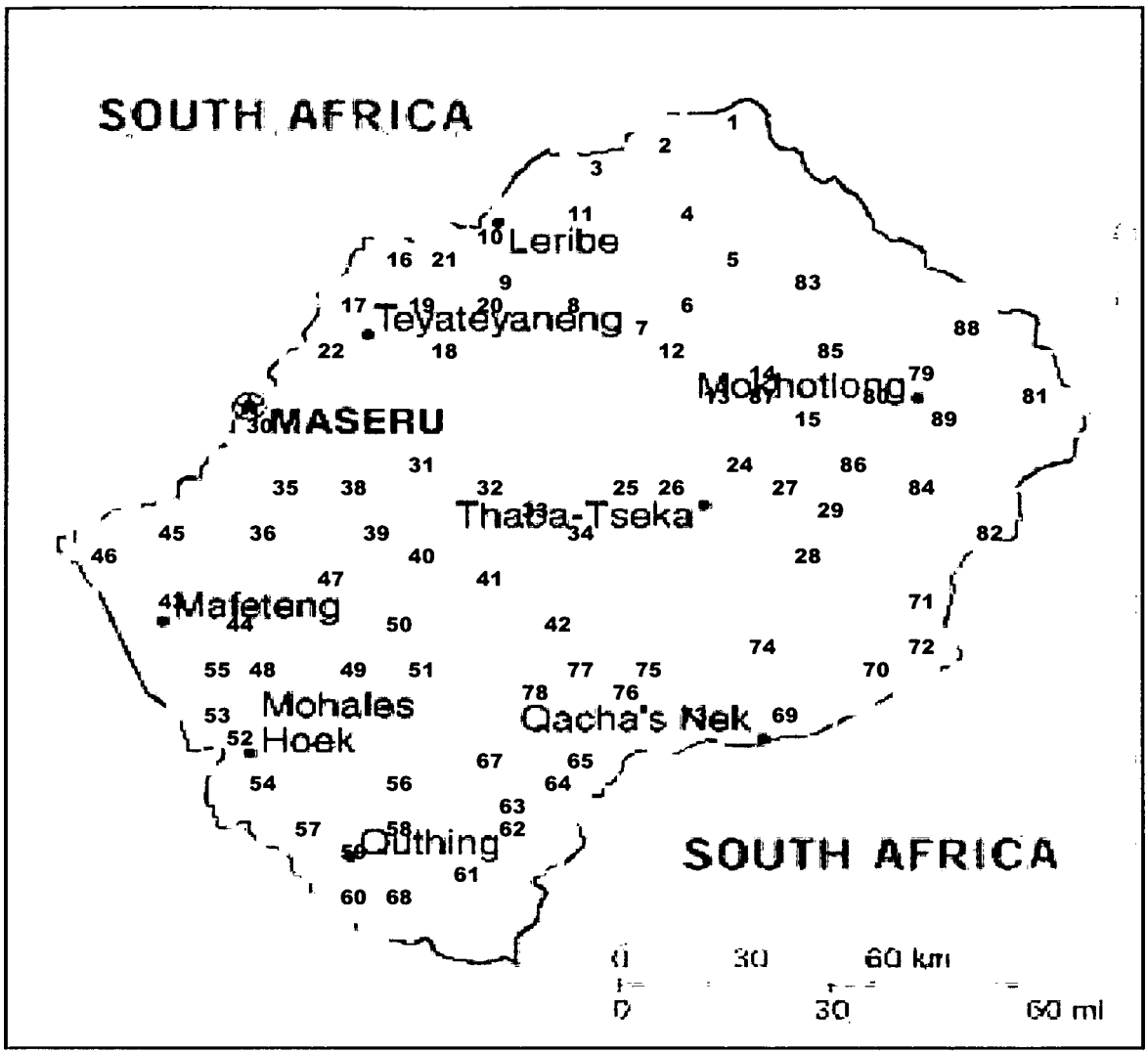

Figure 5.7: Shearing shed locations in Lesotho

Some shearing sheds deliver less than 10 bales of wool annually and their continued existence should be evaluated in the light of local circumstances. Some of these shearing sheds are situated at Pela-Tsoeu WGA (4)[1], Pitseng MG (4), Likhutlong MG (3), Makhakhe MG (7), Sehapa MG (8) and at Nokong MG (8). Other shearing sheds produced as many as 300 bales annually, which made these sheds much more efficient. The main reason for low production at most sheds is the location of the shed in relation to the sheep-grazing areas. Detailed information and records regarding wool deliveries per shearing shed are kept by LPMS (Tsoanamatsie, 2003).

[1] The numbers in brackets refer to the number of wool bales delivered annually.

5.5.2 Perceptions and Experiences of Wool Producers from Shearing Sheds

Although the sample sizes taken in the RRA are very small in relation to the total number of wool farmers, results obtained from the RRA confirm other results obtained from previous studies and the opinions of experienced role players in the industry. Participants at the two workshops also authenticate these findings. The following tables are a compilation of some of the results obtained during the RRA. Table 5.4 indicates that the overwhelming reason for marketing wool via the shearing shed system is that farmers believe that they realise better prices this way. Other important reasons for marketing via the shearing sheds is the fact that producers trust the system, it is customary to do business with them and it is the only available marketing channel in many regions.

Table 5.4: Main reasons why producers use the shearing sheds as marketing channel (n = 86)

Reasons	Ranking	Priority weight
Good prices	1	52
Trust	2	22
Custom to do business with them	3	21
Only agent in region	4	11

Respondents were also asked to prioritise the positive points, irrespective of their own experiences, of the shearing shed system. The fact that they receive market-related prices was again mentioned by respondents as the most important benefit of the shearing shed system indicated in Table 5.5. Respondents also indicated that the shearing shed facility supplies them with the advantage of economies of scale, better wool sorting and necessary facilities. The availability of training at the shearing shed is also recognised as a strong point of the system. It is also evident from the results in Table 5.5 that shearing sheds are important in the sense that it fulfils a social role as a place where farmers meet, exchange information and receive training.

Table 5.5: Positive points of shearing shed system (n = 86)

Reasons	Ranking	Priority weight
Good prices	1	64
Economies of scale to the farmers' advantage	2	27
Better sorting of wool and mohair	3	27
Availability of facilities	4	25
The system supplies training	5	13
Guaranteed payments	6	8
A place to meet and exchange information	7	7

As far as negative experiences with shearing sheds are concerned, the majority of farmers indicated that the delay in payments and the long distances of shearing sheds from some of the livestock posts are the most prominent (Table 5.6). Farmers sometimes have to wait more than three months for their payments. This has been quoted as the main reason why farmers sometimes sell to traders and smugglers. The current system requires delivery of the total clip from a specific shearing shed before it is presented on the sales catalogue for auctioning. This causes delays of up to three months for the farmers shearing early in the season. A possible solution is that wool should be dispatched immediately and catalogued as it arrives at the coast. Computerisation of the administration process could speed up the whole process. It will also make it possible to conclude payments into farmers' bank accounts within seven days after auctions (Schwellnus and Louw, 2003; Van der Vyver and Kritzinger, 2003).

Table 5.6: Negative experiences with the shearing shed system (n = 86)

Reasons	Ranking	Priority weight
Have to wait too long for payments	1	44
Distances to shearing sheds are too far	2	31
No control over sorting of own produce	3	16
Prices not good enough	4	4

Farmers were also requested to prioritise some negative aspects of the shearing shed system as a whole (not necessarily their own experience) and the results obtained in this study confirm farmers' personal negative experience of the system. Table 5.7 once again illustrates the negative aspect of delayed payments experienced by farmers.

Table 5.7: Negative features of shearing shed system

Reasons	Ranking	Weight
Have to wait too long for payments	1	64
Cannot negotiate own price for produce	2	35
Commissions are too high	3	17
Facilities are neglected	4	13

Producers were also requested to indicate the main characteristics appreciated in a marketing agent. Results obtained from answers to this question confirm the need of prompt payment as the single main characteristic for both shearing shed farmers and non-shearing shed farmers (Table 5.8). Other important characteristics that were indicated by the respondents include accessibility and service delivery. The services indicated by them include market information, training and shearing services. It is interesting to note that training needs and information are higher on the priority list for non-shearing shed farmers as is the case with shearing shed farmers.

Table 5.8: Main characteristics appreciated in a marketing agent

Characteristics	Shearing shed farmers (n = 86)		Non-shearing shed farmers (n = 24)	
	Priority	Weight	Priority	Weight
Prompt payment	1	40	1	9
Accessibility (must be nearby)	2	18		
Must keep producers informed about prices and market demands	3	17	2	7
Must supply shearing services	4	13	4	1
Must supply training	5	12	2	7

5.5.3 Marketing Costs Incurred at Shearing Sheds

The perception exists amongst some producers that the marketing and transaction costs involved in using government shearing sheds are very high. However, an analysis of these costs indicates market related transaction costs. Table 5.9 is a summary of the wool earnings per district with deductions, transaction costs and administration fee as a percentage of earnings. The data in Table 5.9 shows that administration costs are, on average, less than 2% of the gross income.

Table 5.9: Marketing cost structure for wool per district (2001)

District	Gross amount (M)	Net amount (M)	BKB admin fee (M)	Total deductions (%)	Transaction costs (%)	Admin. fee (%)
Berea	236 607	182 176	5 136	23.01	20.83	2.17
Butha Buthe	1 450 757	1 199 255	23 333	17.34	15.73	1.61
Leribe	1 149 849	955 608	17 507	16.89	15.37	1.52
Mokhotlong	3 547 158	2 962 866	54 687	16.47	14.93	1.54
Quthing	1 640 508	1 270 723	28 877	22.54	20.78	1.76
Mohale's Hoek	1 167 169	926 802	19 231	20.59	18.95	1.65
Maseru	1 853 944	1 479 281	29 182	20.21	18.63	1.57
Qacha's Nek	1 408 161	1 109 878	24 707	21.18	19.43	1.75
Mafeteng	560 653	421 688	11 250	24.79	22.78	2.01
Thaba-Tseka	3 106 781	2 521 829	47 966	18.83	17.28	1.54

Source: BKB, (2003)

Total deductions varied between on average between 16.47% and 24.79% (1991 – 2001) and these include items such as transport costs, dipping fees, brokers' commission, insurance and the objective measuring of wool samples. A breakdown of and comparison between tax invoices for South African and Lesotho producers are presented in Table 5.10.

Table 5.10: Comparison of percentage deductions from RSA and Lesotho producers for the 2002/2003 season

Deductions	RSA producer (%)	Lesotho producer (%)
Commission	4.00%	4.00%
Basic tariff per bale	0.70%	1.26%
Insurance	0.13%	0.13%
WTM-OM costs	0.01%	-
NWGA funding	0.03%	-
Testing	0.61%	1.64%
Dipping fee	-	1.58%
Transport costs	-	1.84%
Administration costs	-	2.00%
Grouping costs	-	0.60%
Total % deductions		**13.05%**

Source: BKB, (2003)

Transaction costs to market wool via brokers in South Africa added up to about 20% until the 2001 season and decreased to between 12% and 13% during the following years due to better prices being realised during the 2002/2003 season. This is a reasonable figure, especially if

compared to the 50% plus of market value deducted by private traders. This means that shearing shed farmers receive on average 30% to 38% more for their produce after deductions than farmers selling their produce to private buyers. BKB and CMW also pay interest on delayed cheques, ensuring that producers do not lose income because of delayed payments.

Table 5.10 clearly shows that the direct marketing costs of Lesotho producers form only 9.03% of their total receipts. The dipping fee and transport costs are excluded from these costs. Costs deducted from Lesotho farmers' income are the same as deductions made for South African farmers' income apart from the dipping levy and transport costs.

5.5.4 Administration in the Shearing Shed System

Personnel from Field Services manage the whole shearing process by weighing and recording each clip from each producer on behalf and under supervision of LPMS. Administration has to be precise because individual producers do not shear enough to make up full clips like their commercial counterparts in neighbouring South Africa. Every little bit has to be weighed and recorded per class per individual because clips are binned together to make up full bales. The administrative burden of keeping such records is enormous. Documentation utilised for recording of each clip includes the following:

- Wool receipt: Receipt to producer to acknowledge delivery;
- split sheet: Summary of deliveries per producer;
- wool stock sheet: Delivery per producer per bale;
- bale balancing record: Summary of split sheet; and
- reconciliation sheet: Reconciliation per association.

Local shearing shed staff members who are employed by Field Services as part of the MOA, prepare documentation relating to the clip of each shed and forward it to the LPMS head office in Maseru. Information contained in these documents relate to classes of wool, the weight of each class and the amount of each class sheared by each producer. Producers receive copies of these records and they can expect to be remunerated according to these records. After all the documentation has been checked in Maseru, it is sent to the respective

brokers, BKB and/or CMW. Further records established by LPMS as cross-references involve the Analysis Book, which records the following data:

- Date of receipt of documents from shearing sheds;
- name of association;
- list of names of producers per association;
- membership document;
- stock sheet numbers;
- number of animals shorn;
- number of bales produced;
- total mass;
- date dispatched to South African brokers; and
- cheque number, proceeds and dispatching data recorded on receipt of the cheques.

The administrative burden is tremendous taking into account that 14,394 cheques were issued by BKB for wool and 11,087 cheques by CMW (for mohair and wool) during the 2002/2003 season. These cheques are all sent to the LPMS head office in Maseru, where LPMS personnel sort and deliver the cheques to individual producers (LPMS, 2003). It sometimes took 3 to 5 months for these cheques to reach the producers. This was pointed out as the priority problem in the shearing shed system.

Administrative procedures instituted by South African brokers are very detailed and sufficient cross-references and reconciliation sheets are maintained to limit errors. The *"TOLMAN"* administrative record system used by BKB is very detailed and supplies accurate information regarding sales (BKB, 2003). Very good relations exist between the two main brokers in South Africa, (BKB and CMW) and LPMS and both these brokers conduct certain services on behalf of LPMS. Deductions for services such as a marketing commission, dipping fee, transport charges, etc. are all levied by the brokers from the wool proceeds and paid over to the Ministry of Agriculture.

5.5.5 Distribution Network for Wool in the Shearing Shed System

Determination of shearing shed schedules and the distribution of wool to bulking sheds are the responsibility of the local Wool- and Mohair Growers' Associations (WMGA) attached to the various shearing sheds. Figure 5.8 is an illustration of the distribution network of wool from the shearing sheds to the auction floor.

Farmers at shearing sheds arrange and pay for their own transport from the woolsheds to the bulk stores located in Mokhotlong, Leribe, Mohale's Hoek, Quthing, Qacha's Nek and Maseru. Most of the wool is then dispatched to the main bulk store in Maseru, from where the wool is transported to BKB in Durban. Another bulk store handling wool produced in the eastern highlands is situated in Underberg in KwaZulu-Natal. Figure 5.8 is a graphical illustration of the current flow of wool, and Figure 5.9 shows the proposed routes from producers to the bulk stores and markets.

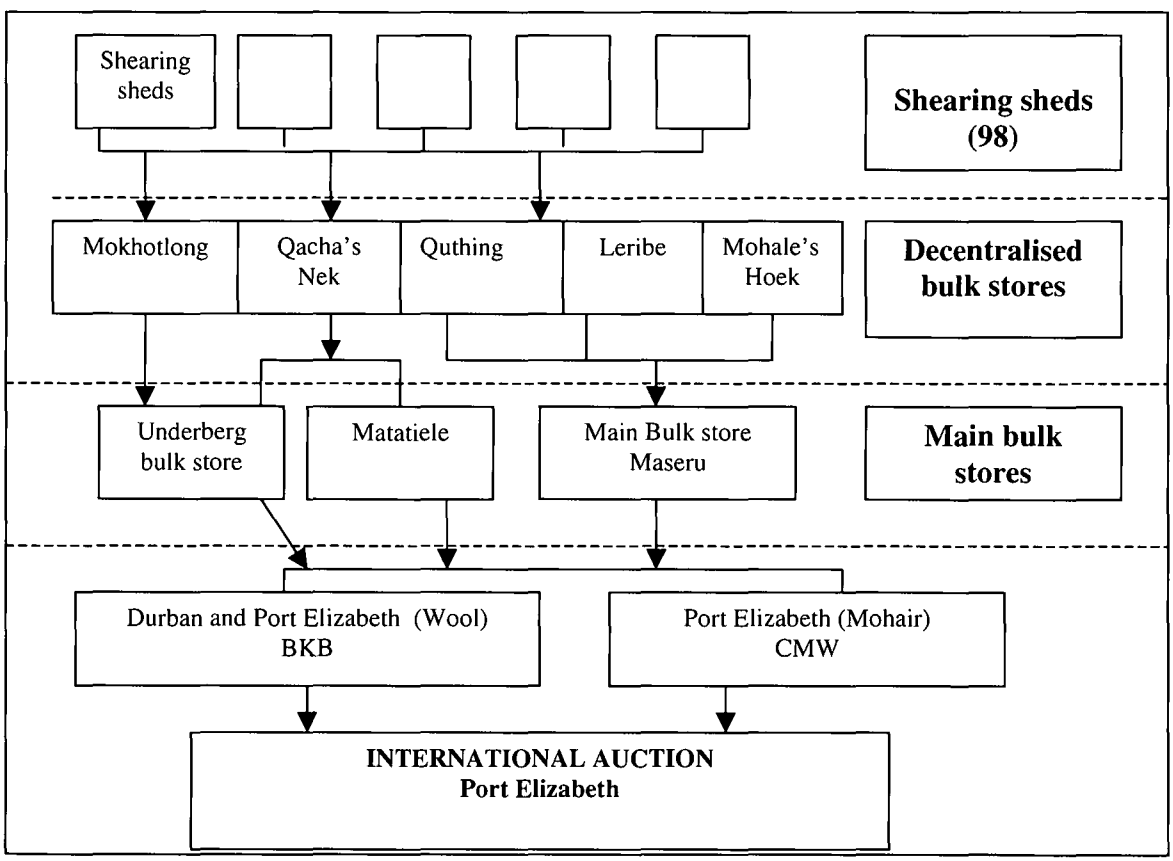

Figure 5.8: Wool distribution network via government-owned shearing sheds

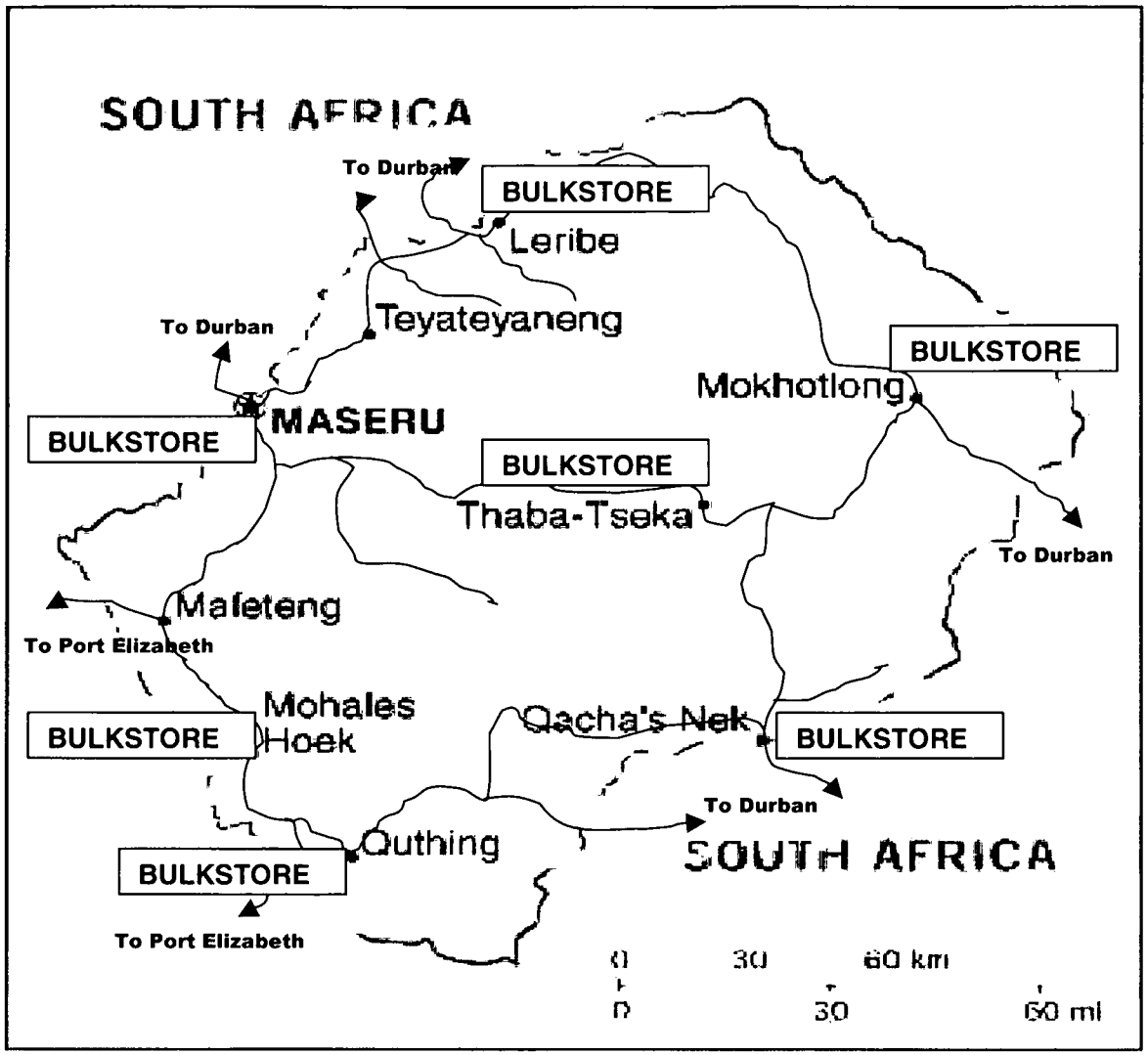

Figure 5.9: Bulk stores and proposed distribution network for wool in Lesotho

Transport and handling costs for wool are high because of long distances and the mountainous terrain surrounding roads in Lesotho. The average transport and handling cost for the 2002 wool clip was M0.45 per kg wool from Maseru to Durban. Transport costs from the shearing sheds to the Maseru bulk store vary between M5 and M65 per bale depending on how far the shearing shed is from Maseru. These costs are deducted from the price of the produce sold by the brokers and paid over to transporters. It seems that some farmers view this cost as a part of the marketing costs, which adds to their perception that brokerage fees are too high. Transportation increases transaction costs with at least 2 percent on average and

the most efficient transport routes to the brokers' bulk stores should be used. Figure 5.9 illustrates the proposed transportation networks.

Although it is acknowledged that the shortest routes are not necessarily the cheapest to use, the following routes should be considered: Wool received at the Quiting and Mohaleshoek bulk stores should be transported directly across the Makhaleng bridge via Zastron to Port Elizabeth. Produce delivered at the bulk stores in Mokhotlong and Quacha's Nek should be transported respectively via Underberg and Matatiele to Durban. Wool delivered at Leribe should be transported directly across the Ficksburg border post to Durban. Maseru produce should be transported through Ladybrand to Durban.

This arrangement will negate the need for a central bulk store at Maseru with additional handling and storage facilities. Administrative responsibilities could still reside at the head office in Maseru. This arrangement will save farmers in the southern and eastern parts of the country up to M0.40 per kg wool.

5.5.6 LPMS as the "Marketing Agent" in the Shearing Sheds System

LPMS can be regarded as a government-owned brokerage service using infrastructure such as the 98 shearing sheds as a marketing channel. The shearing sheds are under the control of the Ministry of Agriculture (MOA), and the Department of Livestock Services manages them. The allocation of the shearing and marketing processes to two different departments sometimes causes managerial problems (Tsoanamatsie, 2003).

The MOA originally established LPMS to manage and support the marketing of livestock products such as wool. LPMS assists producers at the shearing shed until the producers receive their money from the brokers. It means that the LPMS is engaged in the shearing process, classing, packaging, transport and selling of wool. The LPMS also acts as agent between the producers and the main broker in South Africa, Boere Koöperatief Beperk (BKB) (MOA, 2002; Tsoanamatsie, 2003).

Personnel employed by LPMS are attached to each of the ten districts in Lesotho. They assist farmers in the marketing of their livestock and livestock products. Personnel operating in the

shearing sheds are employed by the Department of Livestock Services, but LPMS is responsible for the control of their work. This could cause a clash of interests. It is not a healthy situation if people are employed by one department, yet perform duties for another department.

Figure 5.10 is an illustration of the personnel plan of LPMS. Eighty percent of the personnel are utilised for the marketing of wool and mohair, while the bulk of that time is allocated to wool marketing (Tsoanamatsie, 2003). Activities with regard to livestock sales and hide and skin handling, only comprise a small part of the total activities conducted by LPMS.

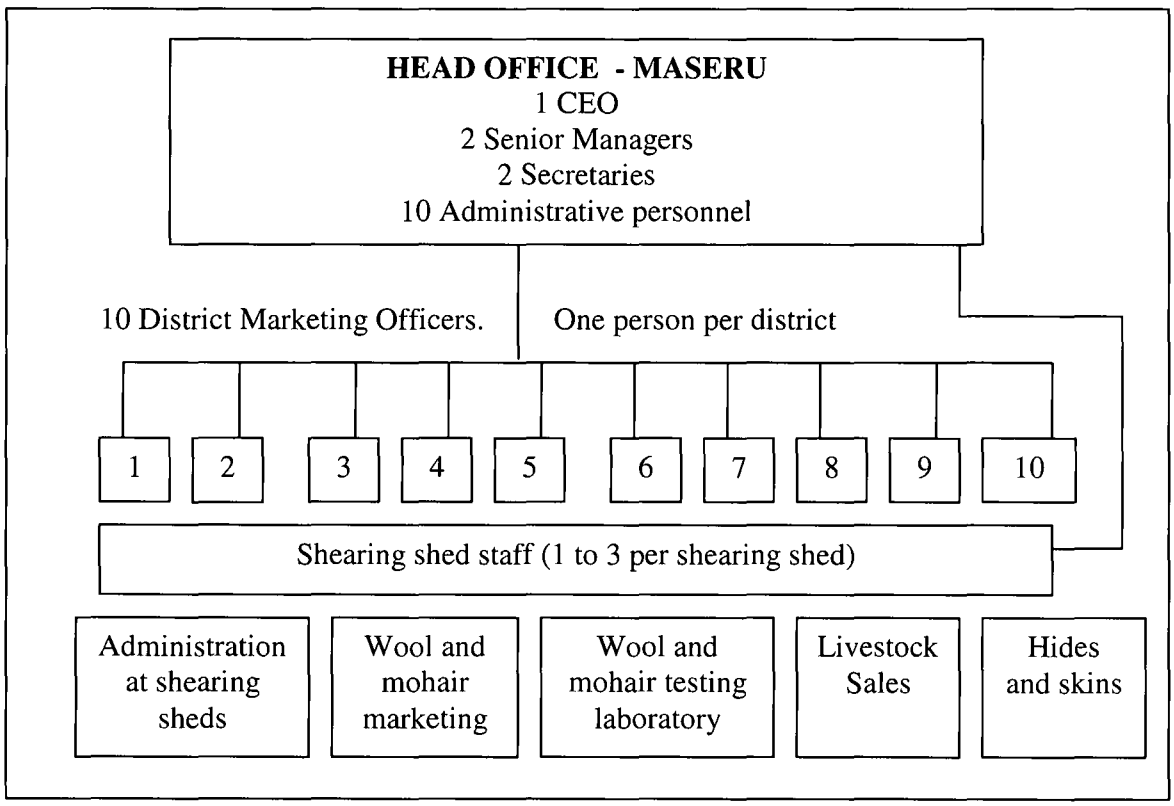

Figure 5.10: Personnel plan for LPMS

Accusations are made that the government shearing shed system is a "government-subsidised marketing system" due to the support rendered by LPMS, which benefits only the bigger producers. In this section the accuracy of this accusation is discussed and the specific costs to the taxpayer are quantified. A detailed policy impact study is also conducted in chapter 6.

Staff employed at the shearing sheds is actively involved in wool-shearing activities for the months of September, October and November. They assist Field Officers with dipping activities during mid-January and February. The shearing of mohair is conducted during March, April and May. In most cases shearing shed administrative personnel are efficient for only six months of the year or at most eight months at the busiest shearing sheds. However, government has to employ and pay them for the full 12 months. The cost of employing two or three personnel members per shearing shed is borne by government and only shearing shed farmers receive the benefits of their employment. The shearing shed farmers happen to be the farmers with larger stock numbers according to RRA results (An average of 86 adult animals of shearing shed farmers compared to 44 adult animals of farmers not marketing via shearing sheds). One can thus safely assume that it is mostly the farmers with larger stock numbers who benefit from the shearing shed system.

The output of shearing sheds varies from only 4 bales to as much as 300 bales per shed per annum (wool and mohair). Four of the shearing sheds produce less than 10 bales per annum, yet personnel have to be employed for these sheds as well. The existence of these sheds should be reviewed or alternatively, permanent staff should not be allocated to such sheds. Although woolshed maintenance is the responsibility of government (Hunter and Mokitimi, 1990; Tsoanamatsie, 2003), farmers perform maintenance duties themselves because government does not budget for it (Tsoanamatsie, 2003).

About 70% of the national flock is shorn in the vicinity of these shearing sheds. Members of the local branches of the National Wool and Mohair Association (NWMA) use government shearing sheds. Facilities at the sheds are adequate for the classing of sheep, for shearing, the classing of wool and packaging of the clip. Members of the NWMA market their clips exclusively via LPMS.

Quantitative measurement of effectiveness and efficiency can only be done on the basis of the costs incurred for these services. According to data obtained from the Department of Trade and Industry, the total budget for LPMS for the 2001/2002 financial years added up to M6, 017,290. Table 5.12 summarises the expenditure for the financial year of 2001/2002.

It is clear from table 5.12 that expenditure increased by 115% from the 2000/2001 to the 2001/2002 financial years. This is an alarming figure especially if taken into account that the budget for 2001/2002 was overspent by 51%. According to Tsoanamatsie (2003) the reason for the increased expenditure is the introduction of field officers employed by LPMS in all the districts. One should expect that an increase of more than 115% in expenditure should be accompanied with an efficient increase of services.

Table 5.11: LPMS expenditure for the 2001/2002 financial year

Expenditure items	2000/2001 expenditure (M)	Original Budget for 2001/2002 (M)	2001/2002 Expenditure (M)	Overspend on original budget (%)	Increase in spending from previous year (%)
Equipment	100 000	109 990	129 290	18%	29%
Salaries	1 992 240	2 076 880	3 272 200	58%	64%
Travel and vehicle costs	342 090	1 192 370	1 919 880	61%	461%
Operating costs	364 300	604 080	695 920	15%	91%
Total	**2 798 630**	**3 983 320**	**6 017 290**	**51%**	**115%**

Source: Department of Trade and Industry (2003)

It is recognised that extra field personnel members have only been employed since 2002. Improvements in service delivery might therefore only become visible during the current and next seasons. No evidence could be found amongst farmers to confirm a major improvement in ground-level service delivery for the past season in accordance with the escalation in total expenditures. The considerable increase in expenditure without noticeable improvement of service delivery or efficiency improvements in the marketing process causes some concern. The increased earnings from the marketing of wool during the 2002 season are the result of better international prices and a better exchange rate for the Maluti relative to the US Dollar. One cannot attribute the higher income from wool to increased services rendered by LPMS.

Nearly 80% of LPMS' activities are concentrated on wool and mohair marketing that is channelled via the shearing shed system. Wool marketing services comprise about 70% of these services (Tsoanamatsie, 2003). In the absence of detailed figures, the following formula was used to calculate the estimated amount spent by LPMS on the sheep and wool industry:

$X = (EY_1)Y_2$

Where:

X = Total amount spent by LPMS on the wool industry;

E = Total annual expenditure of LPMS (M6,017,290);

Y_1 = 80% allocation toward shearing shed services; and

Y_2 = 70% allocation toward sheep and wool system as a % of shearing shed allocation

The above calculation implies that the government subsidised the marketing of wool during the 2001/2002 financial year by approximately M3,369,000. This represents approximately 11% of the total foreign earnings of the wool industry during that year. In times of lower (normal) wool prices, the expenditure as a percentage of earnings will increase and therefore will cause the social costs of the marketing system to become too high. If average real prices over the past ten years are used as a norm, then this percentage increased to as much as 15% of total export earnings.

The efficiency of LPMS as a marketing structure for the wool industry is therefore under suspicion. The expenditure of LPMS in relation to foreign earnings is too high. The recommendation is certainly not to dissolve LPMS totally, but rather to review the major cost items such as salaries and transport. LPMS should be streamlined and should focus only on international marketing and contact with the international markets. LPMS should also develop a national information system to provide farmers, extension officers and other role players with timely market information through the media. Administration and organisation with regard to the shearing sheds, bulking and transporting of wool should be transferred to the farmers themselves with the Department of Field Services supplying the necessary training at the shearing sheds.

Continuation of the services presently provided by LPMS depends on the success of the privatisation process in the wool industry. The successful privatisation of the shearing sheds, coupled with an efficient producer structure to manage it, are prerequisites for the dissolution of certain services presently being provided by LPMS. LPMS should create the necessary environment and provide the required information for the industry as a whole to position itself within a southern African context. If one wishes to differentiate between trade and

marketing, LPMS should rather concentrate on the marketing of national clips. The producers themselves should become more involved in the actual trading of their produce. Farm level information and trading should fall within the responsibilities of the Department of Agriculture conducted by their Department of Field Services. The implication of the above is that LPMS should terminate its field services and hand those responsibilities over to the Department of Field Services. Extension officers should accept responsibility for producer level information and assistance with trade. LPMS might be able to reduce its expenditure by at least 50% or decrease it to M3 million by using these adjustments.

The Government should handle the transfer of services to other departments or producers with great caution. Firstly efficient producer structures (possibly a micro-co-operative structure) should be developed, and the Department of Field Services should be equipped to take over the current responsibilities of LPMS at local level. It is recognized, however, that an alternative opinion exists that the Department of Field Services should transfer more services to LPMS (Tsoanamatsie, 2003). Some of these services include the provision of administrative personnel at the shearing sheds.

5.5.7 Recommendations to Increase the Efficiency of the Shearing Shed System

It is recognised that the shearing shed system forms the backbone of the wool industry. Therefore government and the entire wool industry as such are careful to put the industry at risk with decisions that could affect its future negatively. Producers themselves are also divided on this issue with 58% of respondents who participated in the RRA indicating that government must control the marketing of wool, compared to 41% who indicated that producers themselves must control it. One percent of respondents were uncertain about what should be done.

Producers are reluctant to take over control of the shearing sheds due to their negative experience of the co-operative system in the past. It seems that corruption and bad management caused previous co-operative efforts to fail (Tsoanamatsie, 2003; Moteane, 2003). Many producers are of the opinion that there are no capable leaders to manage the available sheds. It seems, however, that the real reason for the reluctance of producers to

accept ownership of the shearing sheds is the fact that they benefit directly and indirectly from government involvement by means of subsidised services and the experience of the personnel of LPMS and the Department of Field Services.

Privatisation of the 98 government-owned shearing sheds is in line with Lesotho's privatisation policy. This issue has been under discussion since Lesotho started to liberate the agricultural sector in 1997. It seems, however, that the urgency of the original debate is dwindling somewhat due to uncertainty on what the correct action should be (Tsoanamatsie, 2003). The abolishment of the shearing shed system without something better to replace it, is not negotiable at this point in time. Various scenarios are, however, considered as possible for future management and ownership models.

There was general consensus amongst all role players that the shearing shed system is a system contributing towards efficient production as well as marketing. The question should therefore not be the continuation of the shearing shed system, but rather ways and means to make it even more efficient. Privatisation or not seems to be the burning question with regard to the shearing sheds and possible solutions to achieve better efficiency will be discussed at the hand of various scenarios or options.

Option 1: Maintaining of the Status Quo.

The advantage of this option is that government will ensure continuation of the shearing shed system as it has been done since the introduction of the system. Being a core industry and the biggest earner of foreign capital, it is surely in the interest of the Lesotho nation that this industry should be assisted and protected. It is not arguable that LPMS, and DLS via the shearing shed system, are contributing immensely toward the success of the wool industry. The question is whether producers should start to accept greater responsibility for their own produce from the production process up to the conclusion of the marketing process.

If the Lesotho government should decide to maintain the *status quo*, the following criticism can still prevail:

- Shearing shed personnel are employed inefficiently;

- shearing shed farmers receive subsidized services;
- farmers do not have control over their own produce; and
- government do not allow producers to develop their own marketing structures.

Another implication of option 1 is that government should accept responsibility for the maintenance of shearing sheds. Presently no budget allocations are made for shearing shed maintenance and the condition of the shearing sheds is deteriorating rapidly.

Option 2: Privatisation by Handing Shearing Sheds Over to the Producers

Less than half (41%) of the producers participating in the RRA indicated that they would prefer the producers to control the whole marketing process themselves. Two main contrasting views were found regarding this issue. One opinion is that producers are capable of managing and controlling the shearing shed system. The alternative opinion is that producers would not be able to manage the system. Feedback during the two workshops confirmed that last opinion is apparently based on negative experiences from the past with regard to co-operatives, corruption, group conflicts and bad management. Nevertheless, past experiences alone should not dominate future decisions. It is therefore better to identify these negative aspects, take measures to eliminate them, and build a better model for the future.

It is proposed that producers should form micro-cooperatives at shearing shed level with their own board of directors and management structure. These micro-cooperatives should be registered as legal entities and their functions can be broadened according to the needs of their members. The present marketing organizations already offer a good basis for the development of the proposed structures. Ownership of the shearing sheds should be transferred from government to the micro-co-operative with an agreement that the micro-co-operative will accept full responsibility for the maintenance and management of the infrastructure and the handling of the wool clip. A possible micro-cooperative structure could develop as indicated in Figure 5.11.

These micro-cooperatives should, however, affiliate to a primary cooperative that will be responsible for managing the wool affairs of Lesotho as a whole. LPMS could still act as an advisory and support institution to the producers, but emphasis should be placed upon market

information and training. Their training however, should not focus on individual producers, but rather assist these structures with market information and train the leaders among producers in skills such as management, marketing, etc. Extension officers and personnel from the Department of Field Services should offer training with regard to wool and mohair classing, as well as shearer training.

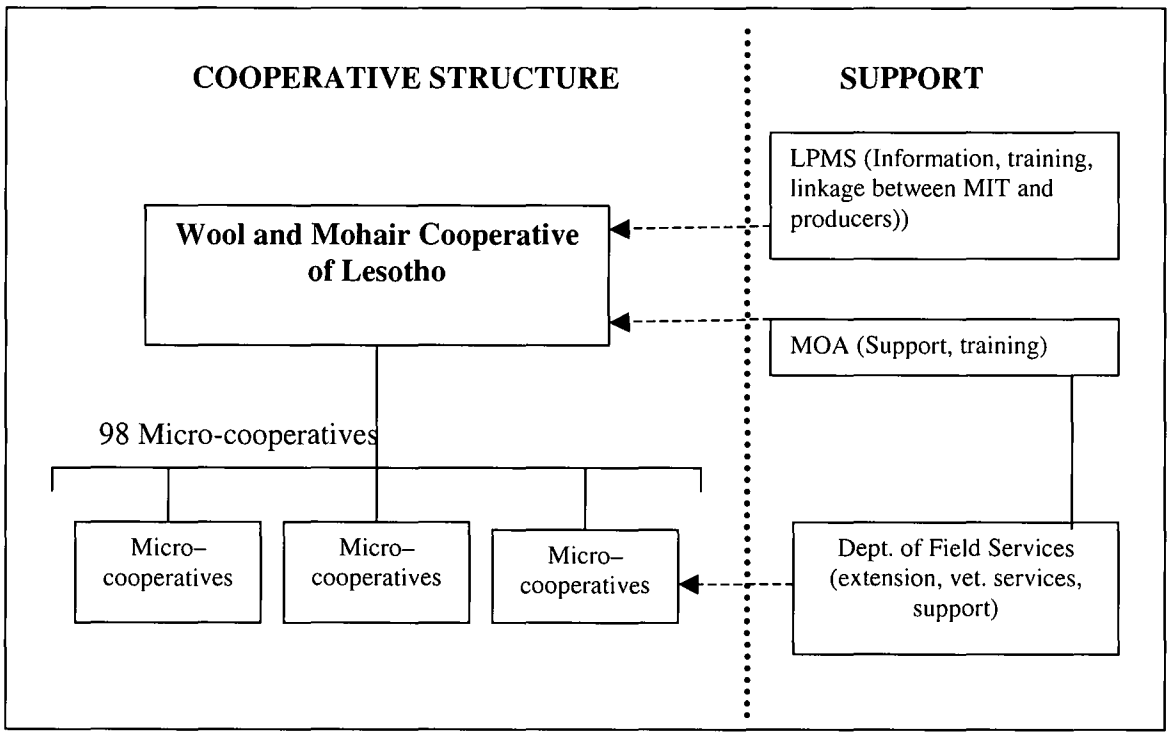

Figure 5.11: Proposed micro-cooperative model

Privatisation of the shearing shed system should be handled very carefully. The "stronger" shearing sheds with greater inherent managerial capacity amongst its members should take the lead. They should develop a system and codes of conduct for members that can be applied by the other sheds to be privatised. This process could be phased in over a period of preferably three years. A five-year phase-in period might be too long and costly, but it would give LPMS and extension officers sufficient time to train the farmers for the new challenge of managing their own shearing sheds.

Employment of the shearing shed personnel should be terminated or the Department of Field Services should make them available to assist producers in a new structure. Eventually,

LPMS should transfer the administrative duties at the shearing sheds to the farmers themselves. They should employ administrative personnel only on a contractual basis in the same way as they are currently doing with the shearers. Advantages of such a rearrangement will be the following:

- Producers will take own responsibility for the handling of clip, including the administration process. Personnel costs for government will be reduced dramatically, because inefficient personnel will not have to be employed for 12 months of the year.
- Producers will be empowered to handle their own affairs.
- These micro-cooperatives have the potential of strengthening producers' capacity to obtain the necessary production inputs.
- Government will not only subsidize bigger farmers.
- The development of a strong micro-cooperative structure would enable producers to develop other important systems advantageous to the total agricultural and rural environment. The introduction of village banking or a co-operative banking system could be developed by means of such a micro-co-operative structure. This would bring the banking and production credit system nearer to the rural farmers, and would therefore contribute toward more efficient production.

Option 3: Privatisation by Selling the Shearing Sheds to Traders or a Private Bidder

A third option may be to sell all the shearing sheds to a private entrepreneur to manage the whole system for his/her own costs. This option was in actual fact considered and discussed with BKB (Schwellnuss, 2003). Too big a risk is involved for the industry if this option is chosen, because it is possible for such an entrepreneur to obtain a monopoly in the market with possible disastrous effects. BKB also mentioned that they are not interested in the option, because it is not necessarily financially feasible due to high operating costs, which will have to be deducted from the producers' fees. Although privatisation by selling to an institution not representing the producers is an option, it is recommended that this option should not be exploited. The risk of the owner of the shearing sheds becoming a monopolistic partner is too big.

Proposals to Increase Efficiency Irrespective of Privatisation or Not

Irrespective of how the shearing shed system is developed, whether it is government controlled or otherwise, certain aspects should be implemented to improve the efficiency of the total system. Delayed payment was the most common criticism against the shearing shed system mentioned by producers and this can be addressed by instituting the following arrangements:

- **More regular sales**. Currently the brokers hold wool and mohair at the auction floor until the total clip of a shearing shed has arrived. It means that the producers shearing their clips in the first month of the shearing season have to wait for all the farmers in that shearing shed to complete shearing before their clips will be auctioned. It is, however, possible to catalogue and auction the wool and mohair as they arrive at the broker's stores (Schwellnuss and Louw, 2003). The result is that clips at shearing sheds will be split up and auctioned on a more regular basis as they arrive in Durban or Port Elizabeth. In this manner producers will not have to wait two to three months before their individual clips are catalogued and auctioned.
- **Computerization of the administration process**. The many small clip sizes marketed as one larger clip necessitates accurate administration, which has been done by hand until now. Computerization of the administration process is necessary to eliminate unnecessary mistakes, to speed up the whole process and to ensure efficient personnel employment. Although it is presently not possible to computerize the administration process at shearing shed level due to the lack of infrastructure such as electricity and telephones, computerization of administration should be introduced at least in the bulk stores in Lesotho and between the brokers and LPMS in Maseru. This process will ensure that all information regarding the clips could be available and on the broker's system even before the clips arrive at their bulk stores. The process of weighing, testing and cataloguing the clips can be completed within days. All the producers' information will be available on the computerized system and payments to

individual producers can be made within one week after the auction (Schwellnuss and Louw, 2003).

- **Electronic payments.** The process of delivering cheques to individual farmers by hand after LPMS has checked them, causes delays of a month or longer in some instances. Some producers reported that cheques had expired by the date they managed to cash them at their nearest banks. This indicates that the time delay between the issuing of cheques and the receipt thereof could be as long as three months. A campaign to motivate and assist producers in opening bank accounts for electronic payment should be implemented. All farmers delivering wool to brokers via the shearing shed system should open bank accounts. Administration of this process should take place during the next shearing season when producers bring their flocks to the shearing sheds. Field personnel should be trained by banks to assist producers in completing their application forms. A special agreement should be negotiated with banks to assist this effort in the sense that they should allow producers to open accounts without the necessary minimum deposit. The advantages attached to electronic payments are that it is a cheaper and more efficient system of payment and that producers receive their money in their accounts within a week after the auction.

5.6 PRIVATE LICENSED TRADERS

The licensing of traders in Lesotho is as old as the industry itself and good reasons existed in the past for implementing this law. The whole market environment changed during the past decade and a review of licensed trading is required.

Private licensed traders use a system of decentralised shearing sheds or bulk stores from where they collect and class their wool. The three major licensed traders operating in the country are Frazers, Mahloenyeng (David Tilford) and Dr Moteane. Between them they operate 32 shearing sheds and/or bulk stores situated in the districts of Mokhotlong, Qacha's Nek, Quthing (2), Mohale's Hoek (2), Semonkong, Leribe, Thaba-Tseka (2), Tlokoeng, Semonkong, Pitseng, Moit'supeli, Raleqheka, Mosala, Qaba, Matelile, Thaba-Tseka, Mphaki(2), Mant'sonyane, Marakabei, T'sitas Nek, Kolo, Mofoka, Bataung, Makhaleng,

Mashai, Katse Dam, Linakaneng and Matsoku. Other licensed traders are Lesotho Cash Stores (a trading station at Mokhotlong), Monethi Ramakalima (two trading stations at Leribe and one at Mant'sonyane), M G. Laki, who handed his trading stores over to the managers at Sehlabathebe and Matebeng, and Cecil Newman with a trading store at Qacha's Nek (LPMS, 2003; Tsoanamatsie, 2003; Tuoane, 2003).

Teba Development Group initiated private efforts in the south of Lesotho in the Mohale's Hoek district to assist farmers and especially retrenched mine workers with production. The major mining houses in South Africa such as Lenmin, Implats, Gold Fields and the Chamber of Mines financed this initiative. Teba Development Group funded the project and Mngcunube Development Group acted as implementation agency. This project entails the supply of mobile shearing and classing services rendered to farmers coupled with some basic *ad hoc* training, especially with regard to health control programmes. Very good results have been obtained with this intervention and average wool yields of farmers that participated in the Teba project increased by 0.5 kg during the first year. Mahloenyeng buys the wool sheared at these mobile shearing sheds (Kew, 2003).

It was evident during interviews conducted with private traders that the smugglers pose a threat to their business. They find it unfair that they have to make provision for the dipping fee, whereas smugglers are not subject to this expense. The licensing preconditions of maintaining infrastructure within Lesotho, such as classing facilities and shearing sheds, were also considered to be discriminatory, but traders recognised the importance of having such an infrastructure available to ensure the shearing, classing and packing of wool.

Private traders play an important role as alternative marketing channels to the government controlled shearing sheds, because they offer certain services and advantages to producers that are not available at the government controlled shearing sheds. The following are examples of such advantages:

- In addition to wool shorn in their own shearing sheds, traders also purchase home-shorn fleeces. Home shearing, however, is discouraged because of contamination problems, especially when the produce is transported in plastic fertilizer bags or

mealie-meal bags. Contamination seems to be a huge problem for private traders, and producers sometimes realise low prices because of wool contamination.

- Private traders also purchase mixed and low quality wool, which is not sellable via government controlled wool sheds.
- Private traders pay immediately, offering an alternative to producers experiencing immediate cash flow needs.
- Private traders sometimes collect wool in remote areas where government controlled shearing sheds are too far from producers.
- Private traders buy directly from small farmers, because sometimes it is not worth the farmers' while to travel to government controlled shearing sheds.

The flow of wool via the private traders is illustrated in Figure 5.12.

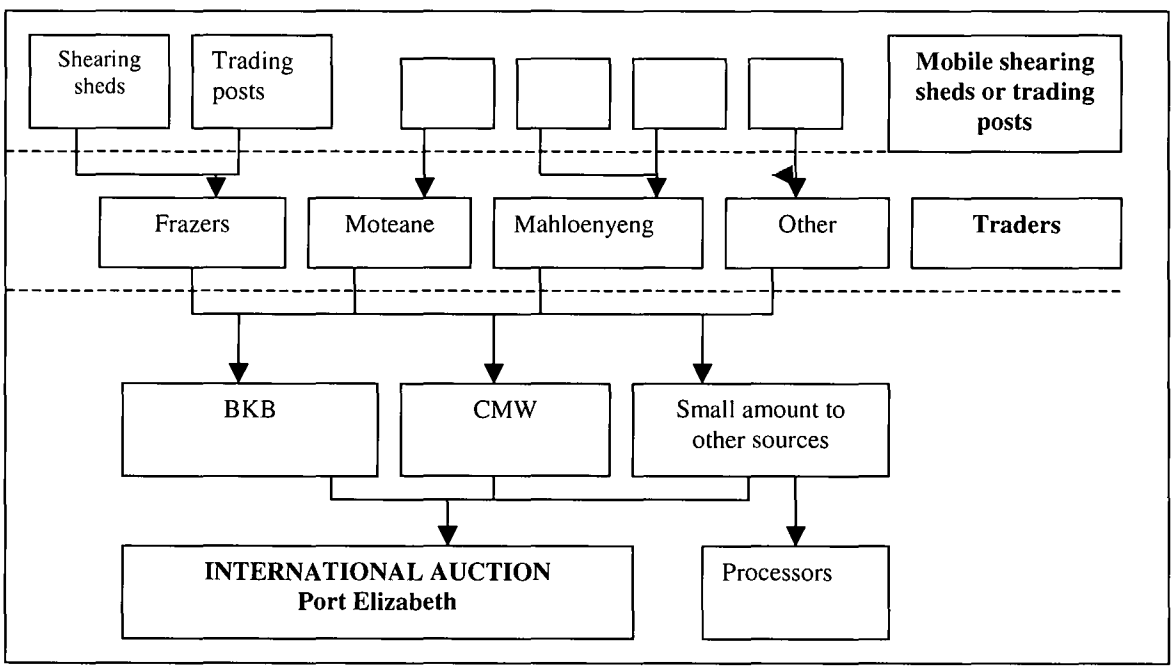

Figure 5.12: Official private trading channels

The prices paid by traders are on average less than 50% of the market realisation and in some instances it was found that traders made profits of up to 200% during specific years (Moteane, 2003). The average price paid for wool by traders during 2001 was M8.00 per kg and for 2002, M14.00 per kg compared to the national average at of M28.00 at shearing

sheds (Tuoane, 2003). It should be noted that due to competition amongst traders, government woolsheds and smugglers, the average prices paid by traders are not easily available and traders tend to be reluctant to reveal their real prices. It should be borne in mind that traders have to deduct their costs, and the prices they pay are net prices, whereas quoted auction prices are the prices realised before deductions of between 12% and 20%. The prices quoted at government shearing sheds are normally gross prices. Producers only receive the amount that remains after all deductions have been made. Comparison of net prices is more ambiguous, yet calculations of statistics made available by BKB and CMW revealed much better prices realised by farmers selling via LPMS. This is confirmed by the results of the Rapid Rural Appraisal conducted for this study.

The three major traders, as well as the smaller licensed traders in Lesotho, make use of the brokerage services of BKB and CMW. It is therefore easy to keep track of produce marketed from Lesotho. Both of these institutions maintain detailed records. The licensed traders are obliged, under their licensing agreements, to make available all statistics concerning wool trading and to pay over to government a dipping fee of M1.00 per kg mohair and M0.35 per kg wool.

Trading via licensed traders has declined dramatically over the past few years, to such an extent that one of the traders indicated that they are considering ceasing their trading activities. One of the major traders indicated a decline in wool trade from 300,000 kg during 1998/1999 to only 130,000 kg during the 2001/2002 season due to factors such as stock theft and the increased activities of smugglers. Expectations are that trading via licensed traders will decrease further (by at least another 30%) in 2004/05 (Frazers, 2003).

Considering the negative experiences of licensed traders during the 2002/2003 season, it seems that the old system of licensed trading might reach the end of its existence. The following is a discussion of possible scenarios or options with regard to the licensed traders.

Option 1: Maintaining of the Status Quo

Maintaining of the *status quo* with regard to the licensing of traders is in the interest of the current licensed traders only and not necessarily the producers. Traders are the ones presently

complaining the most about unlicensed traders. The majority of government officials also argued strongly for the retention of the licensing system. The RRA amongst farmers, however, indicated that farmers themselves are divided regarding this issue. They do not believe that licensing holds any advantage for them as producers, which is in contrast to the opinion of officials and the currently licensed traders.

One of the major problems experienced with regards to the licensing of traders is that law enforcement is non-existent. Unlicensed traders trade unhindered even though they are well known to the authorities. The Department of Justice could not provide a record of anybody having been brought before a court of law as a result of unlicensed trading.

Border control is also not sufficient to control the flow of wool across the borders. Exporters must be in possession of a permit to transport wool across the border posts. This permit is issued by the field offices of the local Department of Agriculture. Customs officials at the border posts confirmed that the transport of wool is controlled by means of these permits and that traders require such permits to transport wool across the borders. However, at some of the border posts, no records were available to indicate any wool exports. Unlicensed traders did in fact transport wool across these border posts during the period of research. It seems that unlicensed traders make use of small licensed traders to purchase and transport their wool across the borders. It also seems as if the authorities simply turn a blind eye to the activities of unlicensed traders.

The following actions should be implemented if government decides to maintain the *status quo*:

- Control of trade in wool should be policed properly;
- offenders should be brought before courts of law;
- the Department of Justice should impose proper punishments for offenders;
- the control at border posts should be improved to manage the illegal transport of unclassed wool across the borders;
- co-operation should be maintained between various government departments at all levels; and

- the issuing of permits should be strictly managed.

The advantages inherent in maintaining the *status quo* are the following:

- Traders are forced to supply some infrastructure in the form of classing facilities and shearing shed facilities.
- Statistics can be obtained from these traders, because it is one of the provisions stipulated in their licensing agreements. Accuracy of these records however, is under suspicion.
- Dipping fees have to be paid over to government according to their licensing agreements.

The disadvantages inherent in maintaining the *status quo* are the following:

- Possible additional trading channels are eliminated. This reduces the opportunity of more competition and better prices for farmers with lower quality wool who may not market their produce via the shearing sheds.
- The police are kept busy with an additional task force policing illegal wool buyers. Producers prefer that the police rather to focus on real issues such as stock theft. Many do not regard the illegal buying of wool as a crime and police therefore do not have the support of the entire society in enforcing this law. It is difficult to police an issue that is not regarded as a crime by the community.
- Opportunities exist for corruption because officials, policemen, etc. can easily be bribed to bend the law because it is commonly not regarded as a crime against society.
- The dipping fee currently paid over to the government treasury is not transparent enough and producers do not necessarily receive their full share back from government.

- Licensed traders can submit false statements with regards to the amounts of produce handled. Records obtained from licensed traders are therefore also not foolproof.

Option 2: Cease Licensing of Traders and the Opening up of Opportunities for Anybody to Trade

Unlicensed traders provide added sales channels to producers and this results in more competition in the direct trade market. This fact has been confirmed by nearly all the traders who admitted that unlicensed traders compete with them and acquired some of their market share due to better prices paid by them (Moteane, 2003; Frazers, 2003). Although less than 30% of the total wool and mohair production is marketed by means of direct sales, it still represents a huge amount of produce in monetary terms.

One of the main arguments in the past in favour of licensed trading was that government tried to protect farmers against exploitation by unscrupulous traders. This argument fell away when it is taken into account that information regarding prices is currently much more readily available to producers by means of radio, extension officers and fellow producers. The fact that the prices paid by unlicensed traders during the past season were higher than the prices paid by licensed traders, also contradicted this argument. It should, however, be mentioned that this situation could be a once-off incident because some unlicensed traders wanted to gain a market share by offering better prices.

The collection of dipping fees and the gathering of statistical data regarding wool and mohair trade are put forward as the main reasons for introducing licensing. If the market is to be liberated, the following should be implemented as substitute for the current system of gathering data and collecting dipping fees:

- Dipping fees should not be levied according to proceeds but rather according to the number of animals owned. The collection of dipping fees could be managed in a decentralized manner via the micro-cooperative system. The fees should then be made available for the dipping of all animals in the specified geographic area.
- The export of wool should be strictly controlled at the borders by customs officials in order to keep detailed records of all exports.

- Good relations should be maintained with the brokers in South Africa to check sales against the statistics obtained from customs officials.

The advantages of the dissolution of licensing could be the following:

- Less administrative tasks conducted by government who have to issue and control licences;
- the Police can concentrate on *bona fide* crime against the society such as stock theft;
- more competition in the direct sales market with possibly better prices to producers;
- more marketing channels for producers; and
- easier access to wool buyers resulting therein that producers in remote areas can sell their produce quicker and more regularly.

Any change could also have cause negative results that should be taken into consideration, for instance:

- New administration procedures should be developed to levy dipping fees in the proposed way. This does not only mean that new procedures are adopted, but also that personnel and co-workers must be trained to manage the proposed system.

Customs officials should be trained to gather the necessary statistics at the borders. There is some doubt, however, regarding whether customs officials will be able to perform this task (Tsoanamatsie, 2003). If this is the case, customs officials should be trained accordingly, because no country can afford that goods enter or exit the country without being properly recorded.

5.7 UNLICENSED TRADERS

The third marketing channel in Lesotho is the unofficial channel normally referred to as "smugglers". Although this marketing channel is regarded as unofficial and against the law,

the perpetrators are well known to the authorities. It became clear during the study, however, that law enforcement is non-existent.

The two major unlicensed traders known to the authorities are operating from Ficksburg and Wepener. Both these traders are based in South Africa, where they class and sell their wool. Both traders make use of smaller "smugglers" within Lesotho, who assist them in obtaining produce. The flow of wool via the unofficial channels is illustrated in Figure 5.13.

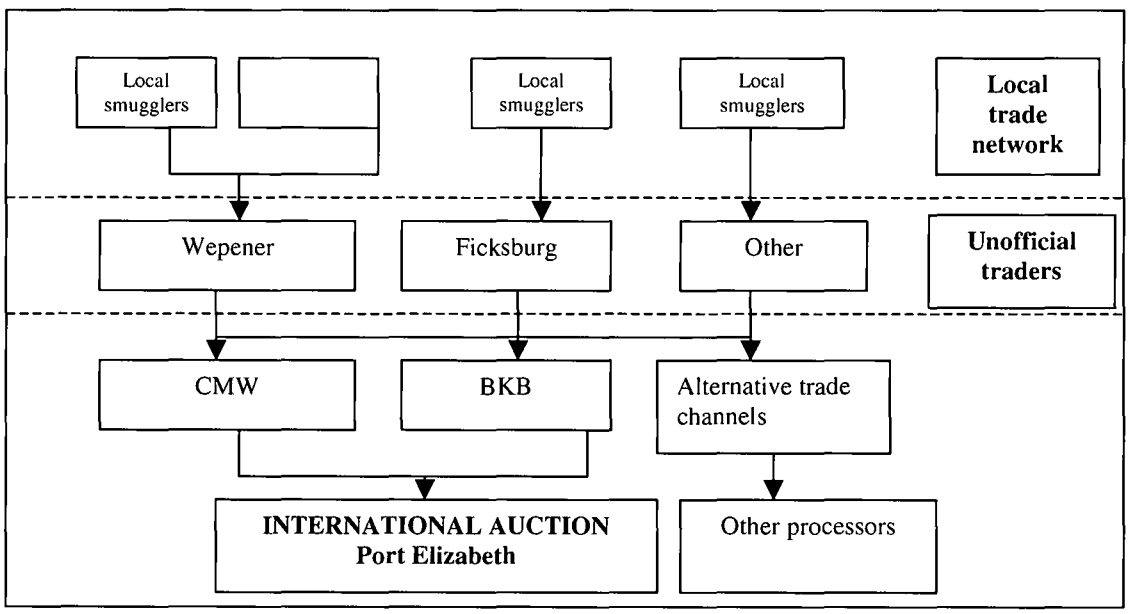

Figure 5.13: Unofficial marketing structure

Allegations made against the smugglers include the following:

- They do not contribute towards the dipping fee;
- they do not supply any statistics to LPMS;
- they exploit the farmers by paying very low prices;
- they purchase wool from stock owners without requesting proof of ownership, thereby contributing to stock theft; and
- they do not contribute to the wool industry as a whole, as they provide no infrastructure or training.

The amount of wool smuggled has increased dramatically over the past season because of an aggressive purchasing campaign launched by unlicensed traders in the south of Lesotho. In contrast to the allegations made above, unlicensed traders offered far better prices than private traders during the previous season. Licensed traders such as Frazers and Dr Moteane reported great losses in market share due to these actions. The perception exists that this was done purely to challenge the licensing system and to gain a market share. However, personal communication was conducted with the "smugglers" and they indicated that the prices paid were market-related and that privately licensed traders are in fact exploiting the farmers. In the short term this added competition in the market benefited producers who realised better prices, but the medium- to long-term effect depends on the amount of competition allowed and on the reaction of traders to a completely liberated market system.

The following factors motivate wool producers to sell to unlicensed traders:

- Unlicensed traders collect produce at home;
- they pay cash on delivery of produce;
- during the past season they paid better prices than the licensed traders;
- they purchase any quality and quantities of wool, offering a good outlet for the very small farmer and the farmers with low quality wool; and
- they purchase produce without requiring proof of ownership of livestock.

One of the unlicensed traders is selling all the produce purchased in Lesotho as Lesotho wool to CMW, thus enabling CMW to record statistics regarding Lesotho produce. CMW also agreed to subtract the dipping levy from this produce and to pay it over to LPMS (Van der Vyver and Kritzinger, 2003).

5.8 ALTERNATIVE MARKETING CHANNELS

Alternative marketing structures again offer more than one possible scenario with specific advantages and disadvantages. The current system by means of which the Lesotho clip is offered to the international market via the South African auction system has been in place for the past decade. Various attempts to implement alternative structures have failed in the past. One such prominent attempt was the proposed implementation of a scouring plant. This

effort failed, partly due to the fact that producers do not want to enter into agreements with owners to supply their wool at fixed prices to the plant and therefore forfeit an opportunity to compete on the international market (Tsoanamatsie, 2003).

The development of more secondary industries is to the advantage of the economy of the country as a whole and does not form part of one of the three alternative options. This should be promoted irrespective of which option is selected. Secondary industries, however, require processed materials and will have to compete on the open market for the best quality at the best prices. Strategies aimed only at buying locally manufactured or produced goods would most probably result in inefficient purchases, because the prices could be higher and goods of a lesser quality could be provided compared to the products available on the international market.

Again more than one option or scenario is compared in order to determine the best possible option to follow.

Option 1: Maintaining the South African Auction System as Major Marketing Channel

Investigation into alternative marketing channels reveals that not many options outside the *status quo* are feasible. Currently, the Lesotho industry is exploiting the South African marketing structure to its own advantage by using the infrastructure and volumes provided by the South African clip, therefore obtaining the advantage of economies of scale to compete in the international market. Producers in Lesotho rightfully indicated that they wish to sell their produce on the international market. In a global and decentralized market such as the international wool market, international trends and prices prevail. It is in the best interest of the industry to compete and participate in the international market.

This study confirms the results obtained in previous studies (Hunter and Mokitimi, 1990), namely that farmers selling via the auction system in South Africa receive better prices than those making use of other channels. The auction system has been proven worldwide to be the best system currently available. Electronic technology, however, opens up new possibilities by making use of electronic sales. This method has been tested in Australia, though only on a small scale.

The following advantages prevail in maintaining the *status quo* with regard to marketing channels:

- Very good relations exist between the two major brokers (BKB and CMW) in South Africa and LPMS in Lesotho. This healthy relation is advantageous to the Lesotho wool industry (Tsoanamatsie, 2003; vd Vyver and Kritzinger, 2003; Schwellnuss and Louw, 2003).
- The Lesotho industry obtains the same advantages at the same costs as provided to the South African producer. These include the following:
  - Information services;
  - statistical data is available per shearing shed, district and nationally; and
  - auction costs such as commissions are the same as for the South African producer.
- The infrastructure of brokers in South Africa is available for use in the Lesotho industry at no extra costs.
- Wool is sold on auction together with South African produce and all the international buyers are present at these auctions and bid against each other.
- The industry receives the advantage of economies of scale with the auction, handling and shipping processes.
- The industry enjoys the advantage of international linkages between the South African industry and the rest of the world.
- Administrative services are provided by the brokers giving the producer the following advantages:
  - Personal cheques are issued to producers;
  - personal statements with split prices are made available to producers; and
  - interest is calculated on delayed cheques and paid over to LPMS.
- Brokers in South Africa deduct the dipping fee from each producer's fee and pay it over to the Lesotho government.
- Brokers have undertaken to deduct dipping fees from unlicensed traders' fees as well.

Option 2: An Own Auction System

Some industry role players mentioned the introduction and development of an own auction system as a possible alternative. This would imply that the Lesotho clip will be auctioned within Lesotho. The following should be taken into consideration if this option is to be evaluated against maintaining the *status quo*:

- New infrastructure would have to be developed. The bulk stores currently in use could supply the necessary storage capacity, but further administrative infrastructure is lacking.
- The Lesotho clip is too small to warrant the holding of frequent auctions and farmers will have to wait even longer for their produce to be auctioned.
- Extra personnel will have to be employed to manage the auctioning of wool.
- Lesotho will lose the advantages of South African linkages with international markets.
- Fewer buyers will bid at small auctions which will result in less competition and lower prices being realised.
- Transport costs to the coast will be calculated and deducted from the auction prices realised by the buyers.
- There will be no price advantage for producers with the introduction of this option. The opposite is a greater possibility due to the reasons already mentioned.

An own auction system might offer certain advantages and these should be measured against the negative aspects to make a proper decision. Some of the advantages of an own system could be the following:

- Money paid out in commissions and auction costs will remain in Lesotho. This means that about 10% to 15% of the total clip value will be spent in Lesotho, if the contract for auctioning is rewarded to a Lesotho-based company or entity.
- A few extra jobs will be created in Lesotho.
- Capacity can be built amongst the newly employed personnel.

- Lesotho's wool industry can separate its clip more prominently from other clips within South Africa and focus on niche markets. A precondition for niche markets, however, is adherence to international environmental laws and production and processing methods in order to earn ecolabel status. At this stage, the critical mass of high quality wool required to enter this market is not available. The rangeland utilization practices within Lesotho with the resultant soil erosion problems will disqualify the wool clip from achieving ecolabel status. The industry should therefore ensure that environmental friendly production systems are in use in the country in order to reap the benefits of ecolabelling.

The disadvantages of an own auction system, however, outweigh the advantages of such a system in the sense that the producer will not benefit anything from it. The fact of the matter is that producers might receive much lower prices and may not be able to reap the benefits of an effective information system currently offered to the Lesotho industry by Cape Wools, BKB and CMW. It is clear that development of an own auction system is not a viable option if the above-mentioned implications are taken into account.

Option 3: Own Processing

Own processing plants would certainly be advantageous for the economy of Lesotho, because of the creation of extra job opportunities and added value to the raw product. The cost and feasibility of such an endeavour, however, result in this option not being viable at this moment in time and furthermore, producers will not benefit directly as a result of this action. Volumes and inconsistent supplies cause the development of own processing plants not to be a viable option to consider (Oxtoby *et al.* 1978; Schwellnuss and Louw, 2003; vd Vyver and Kritzinger, 2003; Tsoanamatsie, 2003).

Option 4: Electronic Sales

Electronic sales are definitely a future option to be exploited. The Australian industry is currently testing this method of selling on very limited basis. The development of the *"AWEX-ID"* system has electronic sales in mind in order to ensure that international classing standards are maintained in compliance with electronic requirements. The challenge attached

to electronic transactions is, however, the participation of a critical mass of sellers or buyers. Wool buyers presently prefer the traditional auction system and it will still take many years to change their behaviour patterns in this regard (Schwellnuss, 2003). The volume of the Lesotho clip in comparison to the Australian, New Zealand and South African clips is insignificant and it would therefore not be a viable option to attract buyers to buy Lesotho's wool electronically. The Lesotho industry should however, keep itself informed regarding developments in electronic sales in order to participate as soon as a critical mass of buyers start to make use of this system. Transformation and investment in an electronic sales marketing system is not considered a viable option at this moment in time.

Option 5: Forward Contracts

Forward contracts are very often used as a very effective risk management tool within agriculture with its high price volatility and seasonal effects. A marketing strategy that includes different marketing channels, however, is the answer to the management of price risks. The grain industry in South Africa serves as a good example of an industry in which producers can safeguard their prices by means of a combination of direct contracts, forward contracts by means of call and put options and by means of direct sales. The volatility of grain prices in the free market sector has compelled farmers to explore these options more vigorously.

All these mechanisms are not available to the wool farmers. One of the major problems experienced with forward contracts within agriculture is the issue of trust and business ethics. Farmers often dishonour their contracts when market prices increase above their contract prices. It is very tempting for them in those circumstances to market part of their contracted produce by means of alternative channels that offer better prices at that stage. On the other hand there are buyers who sometimes try to renege on their contracts when market prices drop below the contract prices. The way in which they manage to dishonour their contracts under such circumstances is by providing produce that is disqualified in terms of the strict classing standards or by giving insignificant reasons specified in the small print of contracts.

The Lesotho industry should take great care if it is decided to make use of sales via forward contracts, especially with regard to the small print in contracts. It is not recommended that the total clip be marked via forward contracts. Many questions and challenges will arise if it is decided to market part of the clip via forward contracts. Some of these challenges are the following:

- Who will be responsible for the negotiating and signing of contracts? Remember that the wool belongs to individual farmers and the lack of a legal entity that could tie them together could pose legal problems.
- Who will enforce a code of conduct if some farmers decide not to honour the contract due to the realisation of better market prices than the contract price?
- Who will be responsible if producers do not honour their side of the contract under the above-mentioned circumstances?
- If all the farmers within a woolshed do not enter into the contract, how will the clip of those farmers be handled?

Although one recognizes the advantage posed by forward contracts as a price risk management tool, it does not seem to be a viable option to explore under the present circumstances in Lesotho. The long-term price trend (nominal prices) for wool is upwards as a result of the exchange rate of the Maluti against the US$. One can therefore expect that buyers will also enter into forward contracts to protect themselves from the effect of volatile prices.

The privatisation of the shearing sheds could open more opportunities for forward contracts, because a specific shed might decide to offer its clip to a specific buyer by means of a forward contract. It is furthermore possible that a legal entity such as a micro-co-operative could act on behalf of its members.

5.9 WOOL-CLASSING STANDARDS

Wool buyers buy quality produce according to international classing standards that are generated within the industry. Australia is taking the lead in the setting of wool-classing standards and other wool-producing countries have to follow them as the international giant

in wool production. Being a follower in the wool market, it is not possible for Lesotho, with its small quantities of wool, to have an influence on international classing standards.

International classing standards are specifically developed according to the needs of consumers and one of the problems experienced by Lesotho producers is the number of classes needed for wool. The main reason why producers perceive the large number of classes as unnecessary is because most individuals in Lesotho own small numbers of stock and they therefore experience difficulty when classing different clips together at each shearing shed.

It is not possible for Lesotho producers to reduce the number of classes according to their own needs without a resultant drop in the prices realised. Mixing different qualities of wool in one bale tends to reduce the price of the better quality wool rather than increase the price of the inferior quality in the mix (Schwellnus and Louw, 2003). The practice of binning different classes of wool together is costly, because this wool has to be re-classed at the sheds in Durban or Port Elizabeth before being sold at auctions. The binned wool could possibly be re-classed at the separate bulk stores before being dispatched to the coast. This could save time and money when the produce reaches Port Elizabeth or Durban.

There are developments in international trade patterns which are also evident in wool marketing, and trading systems have had to adopt the recently developed Australian Wool Exchange System (AWEX). This system was developed by role players in the Australian wool industry in order to enable it to enter the e-trade market. The *"AWEX-ID"* system has been developed as an international standard which is used to describe wool in the finest details in order to ensure that buyers know exactly what quality of wool they are purchasing electronically without even viewing the samples. Schwellnuss (2003) confirmed that BKB as the biggest wool broker in South Africa has also accepted the *"AWEX-ID"* system as their basis for classification. This resulted in an increase in the different wool classes. It will, however, not affect the classing standards applicable to production levels over the short term. Lesotho producers should, however, prepare themselves to class their wool clips according to these standards in the near future.

Lesotho as a market follower should comply with the international classing standards developed in the Australian industry, which are the world market leaders. A reduction in the amount of classes in Lesotho will result in lower prices being paid by international buyers and it is therefore not advisable to reduce the number of wool classes. Although it is recognized that many classes are troublesome when one is dealing with small clips, the better prices realised for good classing according to international standards will make the effort worthwhile.

5.10 INFORMATION AND TRAINING

Respondents were tested on how informed they are with regard to the prices of their produce. It is quite significant to note that respondents are in general well informed even though most of them are farming in rural and very remote areas. It is clear from table 5.12 that 73% of shearing shed respondents indicated that they are informed regarding the quality standards applicable to their wool as well as the latest wool prices. This is in contrast to only 13 % and 8% of non-shearing shed farmers who indicated that they are aware of quality standards and producer prices. Non-shearing shed farmers in general are very poorly informed regarding the wool industry if compared to shearing shed farmers (see Table 5.12). They are therefore more vulnerable to exploitation by traders who buy wool at prices which are below the current market values.

Table: 5.12: Level of information awareness of respondents

Information	Shearing shed farmers	Non-shearing shed farmers
Producer prices for wool in Lesotho	73%	8%
Types and quality required by the market	73%	13%
Producer prices for wool in RSA	23%	8%
Sorting standards	61%	8%
International wool prices	37%	8%
Marketing alternatives	16%	4%
Marketing arrangements with RSA	16%	8%

Table 5.13 shows that the biggest sources of information are shearing shed officials (73%), followed by the radio (67%) and extension officers (48%). This clearly illustrates the important role played by the shearing shed system with regard to technology transfer. The

fact that such a high percentage of respondents also indicated the radio as a source of information is encouraging, because it proves that extension messages can be transferred cost- effectively to a broader audience by means of the radio. Even non-shearing shed producers indicated the radio as their main source of information.

Table 5.13: Sources of information regarding wool prices

Information source	Shearing shed farmers (n = 86)	Non-shearing shed farmers (n = 24)
Shearing shed officials	73%	4%
Radio	67%	21%
Extension officer	48%	17%
Neighbour	15%	8%
Newspapers	12%	4%
Trade agents	10%	13%

Farmers would be able to make better decisions if they are better informed and a communication programme that informs farmers about product prices should be maintained by all possible means.

BKB is managing a detailed information system that provides timely information regarding wool sales and trends, nationally and internationally. Cape Wools are also supplying information with regard to national and international trade and trends in the wool industry. LPMS should therefore focus not only on the marketing and promotion of the Lesotho clip, but also act as the major information agent in the industry especially with regard to international trends and markets. Regular training and information sessions should be held with extension officers and leader farmer to keep them informed with up-to-date information. LPMS must also make sure that they use the radio effectively on a regular basis to transfer the necessary market information to farmers.

5.11 CONCLUSION

This chapter dealt with the trade and marketing issues of wool. The different marketing channels and its advantages were discussed and it became clear that the shearing shed system forms the backbone of the wool industry in Lesotho. About 70% of the total wool clip is marketed via shearing sheds at prices up to 100% better than prices received by non-shearing

shed farmers. It was also pointed out that the statistical data regarding exports obtained from traders seems to be incorrect and that it is possible that traders do not declare all trade transactions conducted by them.

The dramatic increase in prices during the 2002 season also created a false perception regarding the profitability of the wool industry since the real prices were in actual fact just above the average real value achieved over the past 20 years. Apart from the price advantage of wool marketed via shearing sheds, it also became clear that shearing shed farmers are better informed, receive more extension and make better use of technology applications than non-shearing shed farmers. They also represent the larger farmers who produce wool of a better quality than the rest.

The advantages and shortcomings as perceived by the producers were also discussed and it transpired that the perceived shortcomings can easily be rectified by the implementation of proper administrative procedures and the use of new technology. The advantages overshadowed the disadvantages by far and several recommendations regarding the future of the shearing sheds were highlighted in this chapter. In order to secure a successful transitional period, the privatisation of shearing sheds should be arranged in a very cautious manner. Privatisation should be accompanied by the implementation of micro-co-operatives or similar structures in the rural areas to ensure better institutional capacity at grass-roots level.

The efficiency of the government services was also evaluated in this chapter and it transpired that LPMS should review its own role in the rural areas. Transferral of the shearing shed duties of LPMS to the Department of Field Services is one of the recommendations to be considered by LPMS.

The three main marketing structures in Lesotho are the shearing sheds, licensed traders and unlicensed traders (smugglers). All three marketing channels respond to the specific needs of its clients. The study suggests that a monopoly has been formed by the licensed traders over the past years and that the unlicensed traders are currently threatening the existence of this monopoly to the advantage of the producers. Several scenarios or options and possibilities

regarding the possible future marketing systems were also discussed in this chapter. These options supply the necessary background information to allow the authorities and other role players in Lesotho to evaluate and decide on the optimal alternative scenario.

In the next chapter the Lesotho wool system will be evaluated at the hand of an empirical estimation done in the form of a policy analysis matrix (PAM). The purpose of the analysis in the next chapter is to obtain empirical evidence for some of the a-priory observations made in this chapter. The analysis will determine the efficiency and competitiveness of the wool system and endeavours to substantiate some of the concerns highlighted in chapters 4 and 5.

CHAPTER 6

POLICY ANALYSIS MATRIX OF THE WOOL SYSTEM

6.1 INTRODUCTION

Policy-makers should have a clear way of evaluating policy implications and decisions taken and implemented by them. They must be able to judge one alternative against the other: What policy interventions are needed to promote efficiency? What type of policy is needed? In an ideal situation, all governments would have similar approaches toward policy decisions. Too many variables and dissimilar circumstances exist from country to country and from commodity to commodity. Therefore, decision-making with regard to policy interventions should be undertaken on merit, with the assistance of quantitative methods. For rational decision-making to take place, policy-makers need a clear and logical way of evaluating policy options (Pearson, Gotsch and Bahri, 2003).

The refinement of analytical tools and the availability of useful data allows for more informed decision-making amongst policy-makers, agricultural economists and other role-players. One of the major results of globalisation is that countries now compete against one another for markets. Commodities within countries not only compete against other commodities within that specific country, but also against commodities in other countries. Countries should therefore strive to be competitive, and to generate products with a comparative advantage (Porter, 1990). As an integral and key component of macro and trade policy, agricultural price policies can be examined in terms of macro (exchange rate and interest rates, trade export and import) and sectoral (outputs and inputs) characteristics. The analysis can also be single market, multi-market, sectoral, intersectoral or macro; partial or general equilibrium, static or dynamic (Tsakok, 1990).

The highest possible level of real income and economic growth arises when competitiveness and comparative advantage are equalised, so that the most socially valuable activities attract

the most resources (Masters, 1995). An opportunity for new policies, projects and programmes arises within countries and globally, because of substantial differences between comparative advantage and competitiveness. Policy implications of competitiveness and comparative advantage in terms of profitability, mean that national income will increase with the expansion of socially profitable activities, while expanding privately profitable ones may not have the same result.

Agricultural policy is a critical element in the rate and pattern of economic growth, and should be dealt with by means of a well-organised framework. A framework is an organised and consistent approach for clear thinking. Such a framework of policy analysis can reduce misunderstanding and emotionalism, and is designed to permit the study of linkages in economic systems (Pearson *et al.* 2003). Pearson *et al.* (2003) also stated: *"Good economic analysis is fascinating for economists, frustrating for non-economists, and relevant for everyone because it focuses on linkages within an economy."* Agricultural policy analysis consists of the evaluation of government interventions with the aim of changing economic behaviour within the agricultural sector.

Governments impose policies on the agricultural sector in the belief that intervention can accelerate the rate of income growth. The following are the main rationales for policy intervention put forward by policy-makers (Monke and Pearson, 1995):

- The examples of public sector interventions essential for increased economic activity include the provision of public goods such as infrastructure development (roads, schools, hospitals, etc.) and the research and development of new technology.
- A second rationale for government intervention is the correction of market failures in the agricultural sector. Market failures are more prevalent in under-developed countries and distant rural areas. Conditions of imperfect markets often prevail in factor markets (labour, credit, land). Externalities also cause imperfect markets. Soil erosion, environmental pollution and over-utilisation of common property resources are examples of common externalities. Some form of intervention such as government tax, levies, subsidies or regulatory control is undertaken so that user costs (or returns) will reflect the full implications of the externalities. The value of

externalities is difficult to quantify and economists rely mostly on subjective judgments to quantify externality impacts.

- The most commonly used rationale for government interventions in developing countries is the promotion of non-efficiency objectives. Most often policies respond to the desires of special interest groups within or outside agriculture. The establishment of an efficient economy and the maximisation of aggregate income are not the only goals of economic policy. The following non-efficiency objectives also play a role in determining whether government intervention should proceed:
    - Income distribution in developing countries is often the non-efficiency policy with the highest priority. Low food prices are commonly considered as an important determinant of the welfare level of poor consumers. Food prices also influence producers' income levels, and could therefore generate a more equitable distribution of income in the total economy. Income distribution policies will also reflect the influence of rent-seekers.
    - Another popular justification for policy intervention in agriculture is price stabilisation. Inelasticity of demand and changes in weather conditions result in huge fluctuations in food supply and prices. The consequent fluctuations in earnings by poor and small-scale producers and variations in expenditure by poor consumers are undesirable if government policies target the upliftment of the poor.
    - Food security and food self-sufficiency are the third set of non-efficiency policies.
    - Income taxes are a relatively unimportant source of revenue in developing countries, because informal methods of income payment are prominent. The administrative costs attached to income monitoring and tax collection are therefore prohibitive, with the result that these countries most often rely on income generated by taxes and levies on commodities.

The relative importance of each justification for intervention varies from country to country. Cross-country variations in agricultural sector objectives are large. The importance and effectiveness of various lobbying groups (producers, consumers, government agencies and

foreign governments and corporations) vary across countries. Differential resource constraints also create cross-country differences. Budget constraints are other potential limitations on agricultural sector interventions. Technological limitations could also mean that some objectives cannot be realised (Monke and Pearson, 1995). Policy-makers may overcome constraints by using the available policy analysis methodology to select policies that minimise budgetary costs and serve the interests of increased competitiveness and comparative advantage.

The efficacy of both agricultural price policies and public investment in agriculture can be studied by making use of the Policy Analysis Matrix (PAM) approach. The PAM approach shows the individual and collective effects of price and factor policies. The PAM was developed by Pearson in the 1980s in order to make the source of an activity's comparative advantage fully explicit (Masters, 1995). The PAM is, in essence, a formal way to present all the data required to calculate the Producer Subsidy Equivalent (PSE), the Net Social Profit (NSP), the Domestic Resource Cost (DRC) and the Social Cost Benefit Ratio (SCB) or the Subsidy Ratio to Producers (SRP).

The PAM approach provides the necessary analytical information to policy-makers to address three central issues of agricultural policy analysis (Pearson *et al.* 2003).

- The first issue deals with the competitiveness of an agricultural system under existing technologies and prices. The relevant question in this case is whether farmers, traders and processors earn profits under actual market prices. Price policies would impact on input and output prices and therefore the private profitability of the system. A comparison of private profitability before and after policy changes will assist policy-makers in measuring the impact of the policy on the competitiveness of the system.
- The impact of public investment in infrastructure on the efficiency of an agricultural system is the second issue. Efficiency is measured in terms of social profitability. An increase in the value of outputs, or a decrease in input costs, gives an indication of successful public investment. The investment by the Lesotho government in shearing sheds in the wool and mohair industry is a typical example of this issue. A

comparison of social profits before and after public investment will assist government in measuring the social profits or losses realised.

- The third issue is closely related to the second, and measures the impact of public investment in research or technology on the efficiency of agricultural systems. Public investment in research and technology should cause an increase in yields and a decrease in input costs. A comparison of social profits before and after investment in research will assist the government to measure the gain realised in social profitability.

The construction of a PAM for agricultural systems allows one to determine the competitiveness of a system at actual market prices or private profitability.

6.2 POLICY ANALYSIS OF THE WOOL SYSTEM IN LESOTHO

In order to complete a policy analysis matrix for the wool commodity system in Lesotho, enterprise-specific budgets were constructed. Since the financial data obtained from the respondents in the study were inadequate and unreliable for the purposes of enterprise budget construction, additional data were obtained from the Department of Field Services (extension officers) and from Teba Developers. Average values were calculated and confirmed with extension officers, livestock developers and farmers in Lesotho.

As has been indicated in previous chapters, wool is mainly traded for cash. The animals are used to serve other purposes, such as for instance draught power, *lobola*, or meat and milk for daily nutritional needs. More than half of the potential income derived from wool sheep is used for household purposes in this fashion. An opportunity cost equal to the farm-gate price has been used for these incomes. The cost of certain inputs such as family labour, communal grazing and the remuneration of herd boys is also difficult to determine. Parks (1970) notes that subsistence farmers are usually well acquainted with the principal concept of marginal analysis, opportunity costs, etc. He also points out that while relative prices in the market form the choice criterion for resource allocation by a representative firm, for example a commercial farm, this might not be the choice criterion for a subsistence farm. The issue of choice criteria refers to the concept of price. If it is defined in the broad sense as an opportunity cost, then relative price is the choice criterion of resource allocation for

subsistence farmers. The value of the goods produced and used by subsistence and small-scale farmers has to be equal to or lower than the prevailing retail market prices. If this is not the case, households would have opted instead to buy these products.

6.3 COMMODITY SYSTEMS

The PAM framework divides a commodity or enterprise system into four separate activities (Monke and Pearson, 1995; Pearson *et al.* 2003). Figure 6.1 gives a visual representation of the four activities in the wool commodity system and summarises the content of each activity which includes farm production, delivery from farm-gate to processor, processing, and delivery from the processor to the wholesale market.

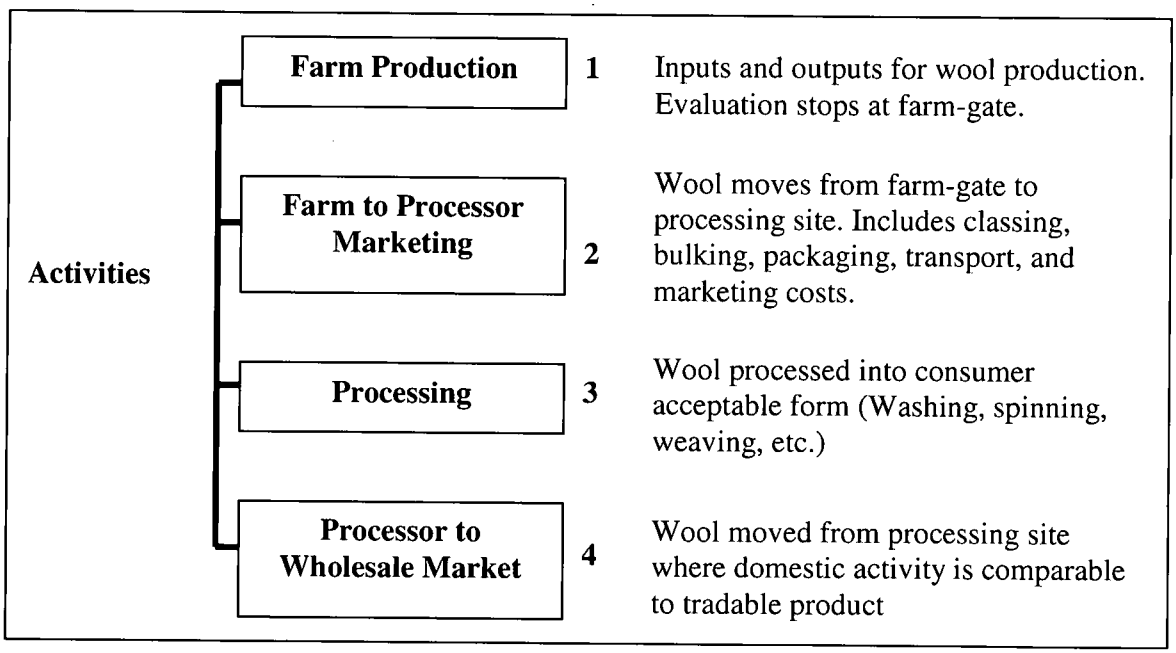

Figure 6.1: Structure of the wool commodity system

The PAM analysis used for the Lesotho wool commodity system includes activities one and two as illustrated in Figure 6.1. The two different marketing systems (shearing shed and non-shearing shed) complicate the PAM calculations to some extent. Farm-gate prices are available for the non-shearing shed farmers since they sell their wool directly to hawkers, traders or smugglers. Classing, packaging, transportation and marketing are then for the account of the wool buyers.

Calculating the revenue of shearing shed farmers is not that easy, since they carry the total costs incurred during activity two (clip preparation, transportation and marketing) and only receive a price for wool after the cost of activity two has been deducted. A solution to this problem is to simply use the average price that farmers receive from hawkers and traders as a farm-gate price for all farmers. However, the results of this study indicated that farmers using shearing sheds are also the ones with larger flocks, and wool of a better quality. The lack of reliable farm-gate prices for wool in the shearing shed system therefore compels one to calculate a single PAM for the total system in Lesotho. The predicament is, however, that this would cause one to confuse the policy implications and the effects of market distortions on the production and marketing systems. It was therefore decided to separate the two activities, and to use the average prices paid by hawkers, traders and "smugglers" as farm-gate prices for the production system of both shearing shed farmers and non-shearing shed farmers.

6.4 ENTERPRISE BUDGETS FOR THE WOOL SHEEP SYSTEM IN LESOTHO

Kay and Edwards (1999) define enterprise budgets as *"an organisation of revenue, expenses and profit for a single enterprise"*. Smith, McCorkle and Outlaw (2002) define enterprise budgets as *"an estimate of the cost and returns associated with the production of a product or products referred to as an enterprise"*. Kay and Edwards (1999) state that the primary purpose of enterprise budgets is to estimate costs, returns and profit per unit for the specific enterprise. The content, organisation and structure of different enterprise budgets may not look the same, but all enterprise budgets contain the same basic sections, such as revenue, variable costs and fixed costs (Kay and Edwards, 1999).

6.4.1 Equations and Data Used for Revenue Calculations

The data used in the budgets are divided into revenues and costs. It should be noted that all prices are given at real values[1]. The revenues are calculated as follows:

[1] Real values calculated from 1998, base year 2004.

- **Wool sales from ewes (Y_1)**

$$Y_1 = (Q_i P_i)n_1 \quad \text{where:} \qquad (6.1)$$

Q_i = Kg wool per ewe

P_i = Real price per Kg wool

n_1 = Number of ewes in average production unit

- **Wool sales from hamels (Y_{1h})**

$$Y_{1h} = (Q_h P_h)n_{1h} \quad \text{where:} \qquad (6.2)$$

Q_h = Kg wool per hamel

P_h = Real price per kg hamel wool

n_{1h} = Number of hamels in average production unit

- **Wool sales from lambs (Y_2)**

$$Y_2 = (Q_l P_l)n_2 \quad \text{where:} \qquad (6.3)$$

Q_l = Kg wool per lamb

P_l = Real price per kg lamb wool

n_2 = Number of lambs

- **Wool sales from rams (Y_3)**

$$Y_3 = (Q_r P_r)n_3 \quad \text{where:} \qquad (6.4)$$

Q_r = Kg wool per ram

P_r = Price per kg ram wool

n_3 = Number of rams

- **Potential income from lamb sales (Y_4)**

$$Y_4 = (Q_{lm}P_{lm})n_4 \quad \text{where:} \tag{6.5}$$

Q_{lm} = Live mass of lambs (kg)

P_{lm} = Price per kg live mass for lambs

n_4 = Number of lambs available for sale = $n_2/2$

- **Potential income from sales of adult sheep (Y_5)**

$$Y_5 = (Q_{ce}P_{ce})n_5 \quad \text{where:} \tag{6.6}$$

Q_{ce} = Live mass of culled ewes

P_{ce} = Price per kg live mass for culled ewes

n_5 = Number of adult sheep available for sale per year

- **Potential income from ram sales (Y_6)**

$$Y_6 = (Q_{rm}P_{rm})n6 \quad \text{where:} \tag{6.7}$$

Q_{rm} = Live mass of rams

P_{rm} = Price per kg live mass for rams

n6 = Average number of rams sold per year

- **The total revenue (Y_x) for the system is calculated as follows:**

$$Y_x = (Q_i P_i)n1 + (Q_l P_l)n2 + (Q_rP_r)n3 + (Q_{lm}P_{lm})n4 + (Q_{ce}P_{ce})n5 + (Q_{rm}P_{rm})n6 \tag{6.8}$$

or $$Y_x = Y_1 + Y_2 + Y_3 + Y_4 + Y_5 + Y_6 \tag{6.9}$$

or $$Y_x = Y_{x1} + Y_{x2} \quad \text{where:} \tag{6.10}$$

$$Y_{x1} = Y_1 + Y_2 + Y_3 \quad \text{and} \tag{6.11}$$

$$Y_{x2} = Y_4 + Y_5 + Y_6 \tag{6.12}$$

The values to calculate income according to the above mentioned equations were obtained from the surveys, interviews, statistics and workshops and are shown in Table 6.1.

Table 6.1: Values used to calculate income in gross margin calculations

	Shearing shed system	Non-Shearing shed system
Number of ewes	55	27
Number of hamels	29	15
Number of lambs	33	17
Number of rams	2	1
Average wool yield for ewes (kg/ewe)	2.3	1.8
Average wool yield for hamels (kg/hamel)	2.5	2.3
Average wool yield for lambs (kg/lamb)	1	0.8
Average wool yield for rams (kg/ram)	6	5
Average real price for ewe wool (M/kg)	M12.72	M6.00
Average real price for hamel wool (M/kg)	M12.30	M6.00
Average real price for lamb wool (M/kg)	M16.50	M7.00
Average real price for ram wool (M/kg)	M10.00	M4.50
Lambs slaughtered or sold per annum	15	6
Ewes and hamels slaughtered or sold per annum	10	4
Rams slaughtered or sold per annum	1 every 2 yr	1 every 4 yrs
Average slaughtering weight of lambs (kg)	34	25
Average slaughtering weight of ewes and hamels (kg)	48	45
Average slaughtering weight of lambs (kg)	65	50
Average real price for lamb[2] (M/kg)	8.20	8.20
Average real price for ewes and hamels (M/kg)	6.10	6.10
Average real price for rams (M/kg)	5.25	5.25

Sources: BOS, 2003; BKB, 2003; LPMS, 2003; Moteane, 2003; Tilford, 2003; Tsoanamatsie, 2003.

Most of the culled ewes and lambs are slaughtered for own consumption, used as remuneration for the herd boys or for cultural purposes such as *lobola*. The prices used in this budget are the private opportunity costs for mutton (calculated at average real values, 1998 – 2002). In other words, it is the income farmers could receive for their animals if they were to sell all of them at the available domestic markets.

[2] All meat prices calculated per kg live mass

6.4.2 Equations and Values for Cost Calculations

- **Vet and medicine costs (X_1):**

$$X_1 = (P_aQ_a) + (P_bQ_b) + (P_cQ_c) + (P_dQ_d) + (P_eQ_e)]n1 + (P_fQ_f)n2 \quad \text{where:} \quad (6.13)$$

P_a = Price per unit internal parasite dosage (A)

Q_a = Units per sheep internal parasite dosage (B)

P_b = Price per unit pulpy kidney vaccine

Q_b = Units per sheep pulpy kidney vaccine

P_c = Price per unit bluetongue vaccine

Q_c = Units per sheep bluetongue vaccine

P_d = Price unit per internal parasite dosage (roundworm)(B)

Q_d = Units per sheep internal parasite dosage (roundworm)(B)

P_e = Price per castration ring

Q_e = Unit per lamb

and $n1$ = Number of ewes

$n2$ = Number of lambs

- **Feeding costs (X_2):**

$$X_2 = (P_{f1}Q_{f1}D_{f1})n7 + (P_{f1}Q_{f2}D_{f2})n8 + (P_{f3}Q_{f3}D_{f3})n5 + (P_{f3}Q_{f4}D_{f4})n4 + (P_gQ_gM_g)n9 \quad (6.14)$$

Where: P_{f1} = Price per kg for ram, lamb and ewe pellets

Q_{f1} = Kg ram, lamb and ewe pellets consumed per day per ewe

D_{f1} = Number of ewe feeding days per year

Q_{f2} = Kg ram, lamb and ewe pellets consumed per day per ram

D_{f2} = Number of ram feeding days per year

P_{f3} = Price per kg for maize

Q_{f3} = Kg maize per ewe per day

D_{f3} = Number of culled ewe feeding days per year

Q_{f4} = Kg maize per lamb per day

P_g = Price for grazing per livestock unit (LSU) per month

Q_g = Number of LSU units per month

M_g = Number of months per year

and, n7 = Number of pregnant/lactating ewes

n8 = Number of rams

n5 = Number of culled ewes

n4 = Number of lambs

n9 = Number of LSU in flock

- **Management and labour (X_3)**

$X_3 = H_r + W_i$ where: (6.15)

H_r = Remuneration for herd boys = $(P_hQ_hM_h)n10$ (6.16)

Therefore:

$X_3 = (P_hQ_hM_h)n10 + (W_i)$, where: (6.17)

P_h = Value in Maluti per sheep

Q_h = Number of sheep per month

M_h = Months per year

n10 = Number of herd boys. One herd boy per 100 ewes (Mafaesa, 2003)

W_i = Management of family labour

- **Shearing shed costs (X_4)** consist of shearing, classing, administration, packaging (bales) and transport costs from the shearing sheds to bulk stores. Transportation from the bulk stores to the brokers in Durban or Port Elizabeth is regarded as part of the marketing cost components, since these costs are deducted from farmers' accounts by BKB. Total shearing shed costs (X_4) are calculated by using the following equation:

$$X_4 = P_{s1}n11 + P_sn11 + (P_{s3}Q_{s3}) + (P_{s4}Q_{s4}) + L \quad (6.18)$$

Where: P_{s1} = Shearing price in Maluti per sheep

P_{s2} = Classing price in Maluti per fleece

n11 = Number of sheep sheared

P_{s3} = Price in Maluti per bale (packaging)

Q_{s3} = Number of bales (packaging)

P_{s4} = Average transport price per bale from shearing sheds to bulk stores

Q_{s4} = Number of bales transported to bulk stores (45 - 50 sheep = 1 bale)

L = $0.1(Y_1 + Y_2 + Y_3)$ = LPMS costs which represents 10% of total sales as indicated in Chapter 6.

- **Dipping fees (X_6)** are levied by the government at M0.35 per kg wool marketed to provide for the cost of a national dipping programme. This is calculated in the gross margin cost analysis by means of the following equation:

$$X_6 = L_2((Q_in_1) + (Q_in_2) + (Q_rn_3)) \quad \text{where:} \quad (6.19)$$

L_2 = Dipping levy in Maluti (M0.35)

Q_i = Kg wool per ewe

n_1 = Number of ewes

Q_l = Kg wool per lamb

n_2 = Number of lambs

Q_r = Kg wool per ram

n_3 = Number of rams

- **Marketing costs (X_5)** consist of costs incurred from bulk stores in Lesotho up to the point where processors take possession of the wool on the auction floor. The cost items calculated as marketing costs include transport costs from Lesotho to the markets, agent commission, basic handling tariff per bale, insurance, wool testing, administration, and grouping costs. Data with regard to these costs are accurate, since the agents (BKB and CMW) keep detailed records of all the cost items and supply them to the producers via LPMS. The average percentage costs for handling the total Lesotho clip during the two seasons of 2000/2001 and 2001/2002 are used in the calculations.

The marketing costs attached to livestock sales are also calculated at 6% of sales (LPMS, 2003). The following equation represents marketing costs (X_5):

$$X_5 = X_{11} + X_{12} + X_{13} + X_{14} + X_{15} + X_{16} + X_{17} + X_{18} \quad (6.20)$$

Or $$X_5 = 0.04(Y_{x1}) + 0.0126(Y_{x1}) + 0.0013(Y_{x1}) + 0.0164(Y_{x1}) + 0.0184(Y_{x1}) + 0.02(Y_{x1}) + 0.006(Y_{x1}) + 0.06(Y_{x2}) \quad (6.21)$$

Where: $X_{11} = 0.04(Y_{x1})$ Commission is 4% of total wool sales

$X_{12} = 0.0126(Y_{x1})$ Basic tariff per bale is 1.26% of sales

$X_{13} = 0.0013(Y_{x1})$ Insurance is 0.13% of total sales

$X_{14} = 0.0164(Y_{x1})$ Testing is 1.64% of sales

$X_{15} = 0.0184(Y_{x1})$ Transport costs are 1.84% of sales

$X_{16} = 0.02(Y_{x1})$ Administration costs are 2% of sales

X_{17}	=	$0.006(Y_{x1})$	Grouping costs are 0.6% of sales
X_{18}	=	$0.06(Y_{x2})$	Marketing costs for livestock sales are 6% of livestock sales. This figure might not be applicable to all sales since many livestock producers sell their animals directly, or utilise animals for alternative purposes.

- **Gross margin** calculations for the wool sheep system are done by using the following equation:

Gross margin = $Y - X$ where: (6.22)

$Y = Y_1 + Y_2 + Y_3 + Y_4 + Y_5 + Y_6$

and $X = X_1 + X_2 + X_3 + X_4 + X_5$

6.4.3 Gross Margin Calculations

Gross margins for both the shearing shed and the non shearing shed system are very low with only M160.65 per LSU[3] for the shearing shed farmers and M75.96 per LSU for the non-shearing shed farmers. The gross margins are very low if compared to South African farmers, but evidence in Lesotho exists where farmers manage to increase gross margins dramatically.

Teba Developers[4] have assisted some non-shearing shed farmers since 2002 and their involvement has resulted in dramatic increases in productivity, and therefore also gross margins. Wool yields of farmers who participated in the Teba programme increased with more than 30% from 1.9 kg per sheep[5] to 2.56 kg per sheep during the first year of participation in the programme (Kew, 2004). The gross margin figures of farmers who collaborate with this programme are better than the results obtained by shearing shed farmers, highlighting the inherent potential of the wool industry to increase margins from the present levels.

A average production enterprise budget for the shearing shed system is shown in Table 6.2

[3] 1 LSU = 6 ewes or hamels
1 LSU = 4 rams
1 LSU = 12 lambs
[4] Development NGO with a training focus amongst wool farmers in southern Lesotho.
[5] 26,140 sheep were included in this programme.

Table 6.2: Enterprise budget for farmers making use of the shearing shed wool system in Lesotho.

						Maluti	Maluti per LSU
GROSS MARGIN						**2769.59**	**160.56**
Gross income						**10357.71**	**600.45**
Total costs						**7588.12**	**439.89**
Total production costs						**6459.28**	**374.45**
Total shearing costs						**276.00**	**16.00**
Total marketing costs						**852.84**	**49.44**
		Unit	**Amount**	**Unit value (M)**	**Livestock Number**	**Value (M)**	**Value per LSU (M)**
INCOME						**10357.71**	**782.78**
Sales wool ewes		Kg	2.3	12.72	55	1609.08	93.28
Sales wool hammels		Kg	2.5	12.30	29	891.75	51.70
Sales wool lambs		Kg	1	16.50	33	544.50	31.57
Sales wool Rams		Kg	5	10.00	2	100.00	5.80
Total wool income						**3145.33**	**182.34**
Sales lambs		Kg	34	8.20	15	4182.00	242.43
Sales ewes/hammels		Kg	48	6.10	10	2928.00	169.74
Sales Rams		Kg	65	5.25	0.3	102.38	5.93
Total mutton income						**7212.38**	**418.11**
Vet and medicine costs						**1382.38**	**80.14**
Internal paracite dose	Dosage	Treatment	1	**0.88**	119	**104.72**	6.07
Pulpey kidney	Vaccines	Treatment	1	**2.40**	119	**285.60**	16.56
Bluetongue	Vaccines	Treatment	1	**0.40**	119	**47.60**	2.76
Internal parasites dose	Dosage	Treatment	2	**3.96**	119	**942.48**	54.64
Dipping	Dipping	Treatment	2	**0.00**	119	**0.00**	0.00
Castration rings		Treatment	1	**0.06**	33	**1.98**	0.11
Feeding Costs						**2676.90**	**155.18**
		days	**kg per day**	**M/kg**			
Suppl. feeding ewes	Pellets	120	0.1	**1.80**	55	**1188.00**	68.87
Suppl. feeding rams	Pellets	365	0.1	**1.80**	2	**131.40**	7.62
Roughage	Bales 1,5m	30	1	**0.70**	55	**1155.00**	66.96
Feeding sale stock	Maize	60	0.15	**1.50**	15	**202.50**	11.74
Management and labour						**2400.00**	**139.13**
Herding	Months	12	1	**200.00**		**2400.00**	139.13
Marketing cost: Mutton only			% of sales	**6%**	7212.38	**432.74**	25.09
Shearing shed costs						**276.00**	16.00
Shearing	Sheep		1	**1.00**	119	**119.00**	6.90
Classing	Sheep		1	**0.50**	119	**59.50**	3.45
Woolbags	Wool bag		1.5	**30.00**		**45.00**	2.61
Transport to bulk stores	Wool bag		1.5	**35.00**		**52.50**	3.04
Marketing costs (wool only)						**420.09**	**24.35**
Dipping levy			**c/kg wool**	**0.35**	**119**	**59.33**	3.44
Commission			% of sales	4.00%	3145.33	**125.81**	7.29
Basic tariff per bale			% of sales	1.26%	3145.33	**39.63**	2.30
Insurance			% of sales	0.13%	3145.33	**4.09**	0.24
Testing			% of sales	1.64%	3145.33	**51.58**	2.99
Transport costs			% of sales	1.84%	3145.33	**57.87**	3.36
Administration costs			% of sales	2.00%	3145.33	**62.91**	3.65
Grouping costs			% of sales	0.60%	3145.33	**18.87**	1.09
Marketing costs for livestock sales			% of sales	6.00%	7212.38	**432.74**	25.09

The average gross margin for a typical shearing shed wool farmer adds up to only M2,769.59 or M160.56 per LSU while the gross average income amounts to M10,357.51 or M600.45 per LSU. Expenditure amounts to M7,588.12 or M439.89 per LSU. The opportunity cost of capital and social costs are not shown in the table.

The enterprise budget for non-shearing shed farmers is given in Table 6.3, and the low gross margin realised by this group of farmers is evident. Expenditures, on the other hand, are also much lower due to the lower vet and medicine costs, feeding costs and the absence of marketing costs.

Table 6.3: Enterprise budget for non-shearing shed wool farmers in Lesotho

Description						Maluti	Maluti per LSU
GROSS MARGIN						**658.36**	**75.96**
Gross income						**3076.30**	**354.96**
Total costs						**2417.94**	**278.99**
Total production costs						**2280.54**	**263.14**
Total shearing costs						**60.00**	**6.92**
Total marketing costs (mutton sales)						**77.40**	**8.93**
			Unit (Kg)	Unit value (M)	Livestock Number	Value (M)	Value per LSU (M)
INCOME						**3076.30**	**426.07**
Sales wool ewes			1.8	6.00	27	291.60	33.65
Sales wool hamels			2.3	6.00	15	207.00	23.88
Sales wool lambs			0.8	7.00	17	95.20	10.98
Sales wool Rams			5	4.50	1	22.50	2.60
Total wool sales						**616.30**	**71.11**
Sales lambs			25	7.80	6	1170.00	135.00
Sales ewes & hamels			45	6.75	4	1215.00	140.19
Sales Rams			50	5.00	0.3	75.00	8.65
Total mutton sales						**2460.00**	**283.85**
Vet and medicine costs						**253.44**	**29.24**
Internal paracite dose	Dosage		0.3	**0.88**	60	**15.84**	1.83
Pulpey kidney	Vaccines		0	**2.40**	60	**0.00**	0.00
Bluetongue	Vaccines		0	**0.40**	60	**0.00**	0.00
Internal parasites dose	Dosage		1	**3.96**	60	**237.60**	27.42
Feeding costs		**days**	**kg per day**			**827.10**	**95.43**
Suppl. feeding ewes	Pellets	30	0.1	**1.80**	27	**145.80**	16.82
Suppl. feeding rams	Pellets	30	0.2	**1.80**	1	**10.80**	1.25
Feeding sale stock	Maize	30	0.15	**1.50**	6	**40.50**	4.67
Roughage		30	0.5	**0.70**	60	**630.00**	72.69
Management and labour		**Months**				**1200.00**	**138.46**
Herding		12	1	**100.00**		**1200.00**	138.46
Shearing			1	**1.00**	60	**60.00**	6.92
Marketing costs for livestock sales					6.00%	**77.40**	8.93

According to the data in Table 6.3, non-shearing shed farmers operate at a gross margin of only M658.36 or M75.96 per LSU. Gross income for this group of farmers is on average M3,076.30 or M354.96 per LSU and total expenditure amounts to M2,417.94 per enterprise or M278.99 per LSU.

6.5 CALCULATION OF PRIVATE AND SOCIAL VALUES

Calculations of the private and social values are discussed in this next section, and it is important to note that, although private values are obtained from field work data and cross-checked, social values are - by their nature - rough approximates. The principle of opportunity costs is applied widely in the estimation of social costs.

The compilation of data (enterprise budgets) for private outputs and inputs is the most time-consuming empirical task in the PAM calculation. The estimation of social valuations for products and factors of products, though, is the most challenging analytical task in policy analysis. Information on the social values is vast and often impossible to find, therefore they can only be approximations (Monke and Pearson, 1995; Pearson *at al.* 2003). These estimates must, however, be good enough to convince policy-makers and economic analysts of their quality and applicability, and therefore promote credence in the PAM calculations of social profitability (efficiency) and of divergences (policy transfers and market failures) (Pearson, *et al.* 2003).

6.5.1 Private and Social Output Revenues

- **Wool**

As has been discussed in a previous section, the shearing shed wool system is analysed at the production activity and at the marketing activity. The only available farm-gate prices for wool are the domestic prices paid by traders, hawkers and smugglers. The average real price paid by these buyers is just above M6 per kg wool and this is therefore used as the farm-gate price for wool at activity one. Some evidence show that *"smugglers"* paid 20% more for wool than the traders, a fact that the traders strongly rejected, but enough data could not be obtained to verify this data

statistically. The *"smugglers"* on the other hand, indicated that they do indeed pay better prices than the licensed traders, and still obtain reasonable margins. They accused the licensed traders of monopolistic behaviour. The traders themselves indicated profit margins of 50% (Moteane, 2003). Several invoices from non-shearing shed farmers indicated that traders paid on average less than 50% of the gross price received by shearing shed farmers at the South African auctions. This is clearly reflected in the gross margin data where farm-gate prices represent 52% of the international auction prices (social price). The social farm-gate price, on the other hand, is the international price for wool at the South African auctions, less marketing costs, transport costs, shearing shed costs, and plus shearing and classing costs. These prices were used in the calculations for the production activity of the shearing shed system as well as for the total non-shearing shed system.

It has been indicated in Chapter 5 that the gross price for Lesotho wool is, on average, 17% less than South African wool of the same quality at the international auction system in South Africa. This divergence from the social value is shown in the PAM calculations. The social gross output values for the marketing activity and for the total shearing shed wool systems are therefore 17% higher than the private output price for wool.

- **Mutton or animal sales**

Calculation of the private and social outputs from the sale or domestic use of animals is particularly challenging, since mutton sales have a much larger impact on gross margins than wool sales. This study endeavours to show the effect of policy and distorted markets on the wool system alone. The difference in sensitivity on gross margins between mutton production and wool production cause the distinction between social and private revenue for mutton to overshadow the wool calculations to such an extent that no proper PAM results for wool production alone are possible. The private and social output values for mutton sales are therefore kept the same, although some evidence points toward slightly higher private prices in Lesotho. It is recognised though, that the difference in private and social prices for mutton might

impact the final analysis of the total sheep system. A further study is therefore recommended to include the divergences in mutton sales as part of an analysis as well.

6.5.2 Private and Social Input Costs

- **Vaccines and medicines (X_1)**

The difference between private and social prices for vaccines, medicines and veterinarian products ranges from 10% to 30% depending on the specific product. Calculation of the social prices was done by comparing the local prices paid by producers with prices for the same product in neighbouring towns in the RSA (Wepener, Ladybrand and Ficksburg) plus transport. Private prices in Lesotho are higher than prices paid by South African farmers. This is mainly the result of market distortions i.e. the monopolistic behaviour of the few traders who sell these products in the rural areas. The remoteness of the rural areas, poor access roads and relatively small markets also contribute toward these market distortions. No price policies (subsidies, levies or trade restrictions) are imposed on vaccines and medicines by the Lesotho Government. Many farmers, traders and veterinarians purchase these items from neighbouring South African outlets. The divergence between social and private cost used in the PAM calculations is 20%. 10% of the total costs for vaccines and medicines, is allocated as transport costs, and therefore regarded as a factor cost.

- **Feeding costs (X_2)**

The difference between private and social prices for purchased feed is quite significant. Social prices are calculated by comparing the prices paid in South African outlets plus transport costs to the border (import price), with the prices paid by farmers in Lesotho. Lesotho and South Africa are within a free trade zone with no trade restrictions. No policy interference therefore exists for Lesotho farmers to pay more for their inputs. South African border prices were obtained from neighbouring towns and from South African farmers across the border. Depending on the distance from the South African border, prices for ram, lamb and ewe pellets and maize,

ranges from 15% to 50% higher than at South African outlets where traders and farmers purchase these inputs. This reflects directly on the difference between private and social prices. Transport costs contribute significantly towards the higher prices paid by farmers; however, this is taken care of in the calculation of the social prices. Calculations for roughage are done differently, since Lesotho farmers tend to buy these at inflated prices during the winter months from South African farmers (when roughage is also scarce in SA). Private prices are therefore sometimes 100% higher than the social opportunity cost for roughage, if it were self-produced. The South African private prices (border price) are not used to calculate the social costs, but rather the opportunity cost of producing that roughage. Feeding (including roughage) costs are regarded as tradable. Of the total feeding cost, 90% has been allocated to private and social tradable inputs and 10% to factor costs for both social and private inputs to provide for transport costs. The percentage allocated to transport or factor costs for roughage is 30% because of the bulkiness of the product. Most Lesotho farmers use small 1-ton trucks to transport the roughage to their farms.

- **Grazing**

The calculation of grazing poses another challenge because no private land market exists in Lesotho. The rent paid by farmers in neighbouring South Africa where a land market exists, is between M18-00 and M30-00 per LSU per month. Many Lesotho farmers lease grazing from their South African neighbours, and this supplies a guideline for the computation of grazing values in Lesotho. In the absence of a land market and a value for grazing in Lesotho, the price of M18-00 is therefore used as a guideline to calculate the opportunity cost of the grazing. Livestock farmers in Lesotho use communal land and do not pay lease for land; the total grazing cost is therefore regarded as a social factor cost and not as a private cost.

- **Labour (X_3)**

Perhaps the most controversial calculation is the estimation of social values for labour. For many years, the largest *"export product"* in Lesotho has been its labour to

the South African mining industry. Notwithstanding the high unemployment rate in South Africa, South Africa still provides most of the labour opportunities to the Lesotho population. Migration costs for labourers are negligible because of the free trade agreements, and there is a relatively free flow of labour between South Africa and Lesotho. The cultural connection between the Lesotho people and South Africans and the fact that Lesotho is surrounded by South Africa, also increases the free flow of labour between the countries. Labour legislation in South Africa is much more advanced than is the case in Lesotho, and this has an influence on the Lesotho labour market as well. Monke and Pearson (1995) argue that market failures are often identified by the regional comparison of prices paid due to the factors involved (labour, land, etc.). If factors are mobile between regions, integration of the factor market is possible, and factor prices in one area may be linked to factor prices in another. One can therefore argue that the realisation of minimum wages for farm workers in South Africa could also influence the agricultural sector in Lesotho. An interesting point to consider, however, is that the bulk of the labour used in the livestock sector is derived from the work done by herders or herd boys. According to Tsoanamatsie (2003), the majority of herd boys are under age (16 years and younger) and according to international legislation on child labour practices, excluded from the international (South African) labour market. Nonetheless, traditional Sothos regard it as part of their culture that these young boys should do herding at a certain stage in their lives (Tsoanamatsie, 2003; Mafaesa, 2003). As remuneration, livestock farmers pay them one sheep per month or one cow per year in addition to the provision of food supplies (Mafaesa, 2003). A comparative market does not exist (because most herd boys are under-aged) in South Africa, and one can assume that the migration of herd boys to areas where larger wages are offered, so as to reach a point of equilibrium, will not take place. Taking into consideration the absence of a comparative labour market for herd boys, and the cultural/educational role of herding, this study assumes that private values equal social values for herding. The effect of international labour laws controlling child labour is not evaluated in this study due to a lack of evidential facts, but it is certainly an aspect which could have an impact on the livestock industry in Lesotho and is therefore worth investigating. The total

amount incurred for herding is therefore regarded as a private factor cost and as a social factor cost.

Social labour cost for shearers and classers are 20% higher than the private costs for labour in Lesotho. Most of the shearers in southern Africa originate from Lesotho. This group of labourers is treated in the analysis as skilled labour with a high demand in South Africa – therefore the higher social costs. Because of reasons mentioned earlier, this group is tradable between the countries and its costs therefore treated as tradable private and social costs.

- **Shearing shed costs (X_4)**

Although shearing costs are grouped together with shearing shed costs in the enterprise budget, they should be separated from the non-tradable costs as part of the production activity for the purpose of PAM calculations. The reason for this is the fact that many of the non-shearing shed farmers are responsible for the shearing of their own wool before they sell it to the buyers at the farm-gate. Most non-shearing shed farmers, however, make use of the services offered to them by the licensed traders, but shearing costs are then deducted from their wool revenues.

The only factor cost is the transport costs for the packaging material (wool bales) and this equals 10% of the price of the packaging material. All other costs allocated to shearing shed costs are tradable and this consists of labour where social cost is 20% higher than private cost.

- **LPMS costs**

LPMS costs in their totality are regarded as a social domestic factor since farmers do not pay for the services delivered by LPMS. Included in these costs is the labour supplied during dipping, dissemination and the distribution of information, the maintenance of shearing sheds (although Tsoanamatsie (2003) pointed out that this has been seriously neglected over the past few years), the administration at shearing sheds, the handling and binning of wool, bulk storage costs and post-marketing

administration. The value of 10% of total sales as LPMS costs was calculated in Chapter 5 of this report.

- **Marketing costs**

All marketing costs are regarded as factor costs, since they are directly linked to the wool sales and subtracted from farmers' gross income. The divergence that resulted in a lower social cost is the extra cost incurred by farmers (private cost), because of the additional administration and grouping fees levied on Lesotho producers by BKB.

6.5.3 Summary of Private and Social Costs

Completion of the PAM is simplified by systematically categorising various revenue and cost items. Table 6.4 shows the different revenue and cost categories, as well as the allocation of cost items to the different categories.

Table 6.4: Summary of private and social values for the production activity only

Revenue/Cost	Private values		Social values		Comments
	Tradable	Factors	Tradable	Factors	
Revenue: Wool	1470.00 (A)		3043.07 (AA)		**Private values** = Domestic price for wool at farm-gate. **Social value** = International auction price – marketing cost – transport (auction and bulk store) – shearing and classing cost.
Revenue: Mutton	7212.38		7212.38		Real mutton price. Kept constant for both private and social values.
Total revenue	**8682.38**		**10255.64**		
Vet & medicine	1244.14	138.24	1105.90	124.41	**TPC**[6]: Cost for farmers at border **PFC**[7]: Transport from border to rural Lesotho **TSC**[8]: SA prices + transport to border **SFC**[9]: Transport from border to rural areas.
Dipping cost			142.80	95.20	**TSC:** Direct costs for 2 dipping treatments calculated at border price for medicines. **SFC:** Cost for unskilled labour and support from LPMS.
Roughage	727.65	311.85	436.59	187.11	**TPC:** Cost for farmers at border. **PFC:** Transport cost for farmers from border to rural Lesotho **TSC:** Opportunity cost in SA for roughage + transport to border. **SFC:** Social cost of transport from border to rural Lesotho. Estimation 80% of cost paid by farmers
Supplementary feed	1369.71	152.19	1027.28	121.75	**TPC:** Cost for farmers at the border **PFC:** Transport cost from border to rural Lesotho **TSC:** SA prices + transport to the border. **SFC:** Social cost of transport from border to rural Lesotho. Estimation 80% of cost paid by farmers
Grazing				4140.00	**SFC:** Opportunity cost for grazing @ M18.00 per LSU per month.
Labour		2400.00		2400.00	**PFC & SFC:** Herd boys at M200.00 per month.
Marketing cost for mutton or live animals		432.74		432.74	**PFC & SFC:** 6% of mutton sales or opportunity cost for domestic use. Constant for private and social values.
Total input costs	**3341.50**	**3435.02**	**2712.58**	**7501.22**	

Table 6.5 represents a summary of the private and social values at the shearing shed activity. It is important to note that the cost of wool included in Table 6.5 is the same as the revenue for wool at the production activity as indicated in Table 6.4.

[6] TPC: Tradable Private Cost
[7] PFC: Private Factor Cost
[8] TSC: Tradable Social Cost
[9] SFC: Social Factor Cost

Table 6.5: Summary of private and social values for the shearing shed and marketing activity

Revenue/Cost	Private values		Social values		Comments
	Tradable	Factors	Tradable	Factors	
Revenue: Wool	3145.33		3680.04		**Private value** = Income received by Lesotho at international auction **Social value** = World price for wool at international auction (9% divergence)
Total revenue	**3145.33**		**3680.04**		
Cost of wool		1470.00		3043.27	From Table 7.4 M and MM
Shearing shed costs	219.00		254.70	4.50	**TPC:** Shearing, classing & packaging. **STC:** Shearing X 1.2 + classing X 1.2 + packaging X. 9. International labour cost 20 % higher than in Lesotho. **SFC:** Packaging X .1 for transport cost of packaging materials
Transport to bulk stores		52.50		63.00	**PFC:** Transport from shearing sheds to bulk stores. **SFC:** Transport cost 20% higher in Lesotho than in SA
LPMS costs				219.33	**SFC:** Total LPMS costs – LPMS costs at production activity. Administration and direct support.
Marketing costs		302.90		221.12	**PFC:** Marketing cost subtracted from wool sales at auction **SFC:** Marketing costs – administration cost – grouping cost.
Transport to auction	46.30	11.57	46.30	11.57	**TPC = TSC:** Transport cost from border to auction. **PFC = SFC:** Loading fees and transport cost from bulk stores to border
Dipping levy		59.33		59.33	**PFC = SFC**: Levy @ M0.35 per kg wool.
Total input costs	**265.30**	**1896.30**	**301.00**	**3622.12**	

The data in Tables 6.4 and 6.5 are now used to construct a PAM in the next section for each shearing shed activity, as well as a combined PAM for the total shearing shed system.

A summary of the private and social values for the non-shearing shed inputs and outputs is shown in Table 6.6.

Table 6.6: Summary of private and social values for the non-shearing shed activity

Revenue/Cost	Private values		Social values		Comments
	Tradable	Domestic	Tradable	Domestic	
Revenue: Wool	616.30		1392.63		**Private values** = Domestic price for wool at farm-gate. Price paid by traders. **Social value** = International auction price – marketing cost – transport (auction and bulk store) – shearing shed cost.
Revenue: Mutton	2460.00		2460.00		Real mutton price. Kept constant for private and social values.
Total revenue	**3076.30**		**3852.63**		
Vet & medicine	228.10	25.34	182.48	20.28	**TPC:** Cost for farmers at border **PFC:** Transport from border to rural Lesotho **TSC:** SA prices + transport to border **SFC:** Transport from border to rural areas.
Dipping cost			36.00	24.00	**TSC:** Direct costs for 1 dipping treatment calculated at border price for medicines. **SFC:** Cost for unskilled labour and support from LPMS.
Supplementary feed	177.39	19.71	133.04	13.30	**TPC:** Cost for farmers at the border **PFC:** Transport cost from border to rural Lesotho **TSC:** SA prices + transport to the border. **SFC:** Social cost of transport from border to rural Lesotho. Estimation 80% of cost paid by farmers
Roughage	441.00	189.00	264.60	79.38	**TPC:** Cost for farmers at border. **PFC:** Transport cost for farmers from border to rural Lesotho **TSC:** Opportunity cost in SA for roughage + transport to border. **SFC:** Social cost of transport from border to rural Lesotho. Estimation 80% of cost paid by farmers
Grazing				1872.00	**SFC:** Opportunity cost for grazing @ M18.00 per LSU per month.
Labour: Herd boys		1200.00		1200.00	**PFC = SFC:** Herd boys at M100.00 per month.
Shearing cost	60.00		72.00		**TPC:** Shearing cost @ M1 per sheep **TSC:** Labour cost for shearers 20% higher in SA
Marketing cost for mutton or live animals		44.28		147.60	**PFC:** 30% of animals sold through auctions at 6% marketing cost **SFC:** 6% of all mutton sales or opportunity cost for domestic use.
Total input cost	**906.49**	**1478.33**	**688.12**	**3356.56**	

6.6 CONSTRUCTING PAMS

The construction of a PAM for agricultural systems allows one to determine the competitiveness of a system at actual market prices or private profitability. The PAM makes use of two accounting identities, namely profitability as a function of revenues and costs on the one hand (right-hand column of PAM), and the measurement of divergences (bottom row of PAM) as a result of distorting policies and market failures, on the other hand. Profitability is measured horizontally in the matrix by subtracting total input costs from total output

revenues, whilst divergences are calculated vertically by subtracting social costs from private costs (Pearson *et al.* 2003). The procedure to calculate the empirical construction of a PAM comprises the rewriting of entries in terms of price and quantity variables. This procedure is described in Table 6.7.

Table 6.7: Policy Analysis Matrix

	Revenues	Costs		Profits
		Tradable Inputs	Domestic factors	
Private prices	P=**A**	$\sum_i P_i Q_i$=**B**	$\sum_j P_j L_j$=**C**	π=**D**
Social prices	S=**E**	$\sum_i S_i Q_i$=**F**	$\sum_j S_j L_j$=**G**	π=**H**
Effects of divergence and efficient policy	A-E=**I**	B-F=**J**	C-G=**K**	D-H=**L**

From Table 6.7:

P	=	Value of output
P_i	=	Price of tradable private inputs i
S_i	=	Price of tradable social inputs j
P_j	=	Price of private factor inputs i
S_j	=	Price of social factor inputs j
Q_i	=	Quantity of unit i per unit of output Q
W_j	=	Price of factor input j
L_j	=	Quantity of j per unit output Q
π	=	Profit

The capital P is used to indicate that the value of the variable is the existing or private price incentive. The capital S denotes the value that the parameter would assume under social price incentives. The PAM describes costs and revenues as values per unit of output; the Q_i and L_j represent input-output coefficients. The values however, can be presented equally, as values per hectare, values per sheep, or in terms of any other unit of observation. (The unit of observation used in this study is per livestock unit (LSU)). The Q_i and L_j need only to be multiplied by the relevant output measure.

The construction of a PAM is now very easy, since it is done from the summaries in Table 6.4, 6.5 and Table 6.6. The values from Tables 6.4, 6.5 and 6.6 are divided by the number of LSU's in the two systems (shearing shed farmers and non-shearing shed farmers). The PAMs for the wool system are shown in Tables 6.8, 6.9, 6.10 and 6.11; more specifically, Table 6.8 describes the production activity for a typical shearing shed unit, while Table 6.9 describes the marketing activity necessary for such a unit and Table 6.10 comprises a combined PAM for the total shearing shed system. Table 6.11 represents the PAM for a typical non-shearing shed system.

Table 6.8: PAM for a typical shearing shed unit at the production activity (M/LSU)

	Revenues	Costs		Profits
		Tradable Inputs	Domestic factors	
Private prices	503.85 (A_1)	198.40 (B_1)	183.58 (C_1)	121.35 (D_1)
Social prices	594.53 (E_1)	160.06 (F_1)	440.08 (G_1)	-5.61 (H_1)
Effects of divergence and efficient policy	-91.20 (I_1)	38.33 (J_1)	-256.50 (K_1)	126.96 (L_1)

Values in (A, B, C, E, F, G) Table 6.8 are obtained from Table 6.4. Other values are obtained according to the calculations described in Table 6.6.

Table 6.9: PAM for a typical shearing shed unit at the marketing activity (M/LSU)

	Revenues	Costs		Profits
		Tradable Inputs	Domestic factors	
Private prices	182.34 (A_2)	15.38 (B_2)	109.93 (C_2)	57.03 (D_2)
Social prices	213.34 (E_2)	17.45 (F_2)	209.98 (G_2)	-14.09 (H_2)
Effects of divergence and efficient policy	-31.00 (I_2)	-77.23 (J_2)	-100.05 (K_2)	71.12 (L_2)

Data in (A, B, C, E, F, G) Table 6.9 is obtained from Table 6.5. Other values are obtained according to the calculations described in Table 6.7.

Table 6.10: PAM for the total shearing shed wool system (M/LSU)

	Revenues	Costs		Profits
		Tradable Inputs	Domestic factors	
Private prices	600.45 (A_3)	213.78 (B_3)	208.29 (C_3)	178.38 (D_3)
Social prices	631.44 (E_3)	177.51 (F_3)	473.63 (G_3)	-19.70 (H_3)
Effects of divergence and efficient policy	-31.00 (I_3)	36.26 (J_3)	-265.34 (K_3)	198.08 (L_3)

The data in Table 6.10 is the combined result of Table 6.8 and Table 6.9. Values are added together, except in the case of domestic factors costs. In this case the corresponding values are added to each other, but the input cost of wool, as indicated in Table 6.9, is subtracted from the sum of the corresponding data (C and G).

The PAM for non-shearing shed farmers is shown in Table 6.11. Values in (A, B, C, E, F, G) Table 6.11 are obtained from Table 6.6.

Table 6.11: PAM for the total non-shearing system (M/LSU)

	Revenues	Costs		Profits
		Tradable Inputs	Domestic factors	
Private prices	354.96 (A_4)	104.59 (B_4)	170.58 (C_4)	79.79 (D_4)
Social prices	444.53 (E_4)	79.40 (F_4)	387.30 (G_4)	-22.16 (H_4)
Effects of divergence and efficient policy	-89.58 (I_4)	25.20 (J_4)	-216.72 (K_4)	101.95 (L_4)

6.6.1 Interpretation of PAM results

Interpretation of the PAM results is essential since measures of divergences can include the effects of efficient and distorting policies and market failures. It is also important to determine the contribution of private and social valuations to the results (Monke and Pearson, 1995). PAM ratio interpretation also supplies the necessary tool to compare different systems with each other. In the next section the focus is on the evaluation of PAM results.

6.6.2 Effects of divergences

Measures of divergences can include the effects of efficient and distorting policies and of market failures. It is therefore useful to know how many of the differences between private and social valuations can be attributed to each influence (Monke and Pearson, 1995). The use of PAM results is discussed in this section.

- **Output transfers (I=A-E)**

Most output transfers, wherever they occur, have been caused by distorting policies. The existence or absence of market failures (monopolies or externalities) seldom influences outputs significantly (Pearson *et al.* 2003). Output transfer is the difference between actual market prices and estimated social prices. The social output per LSU for the shearing shed system is M631.44 and the private output value M600.45. The result is a negative divergence of M31.00 (Table 6.10). The divergence is the result of lower prices (17%) paid by international buyers for Lesotho wool, compared to South African wool of the same standard at international auctions. According to Schwellnuss and Louw (2003), buyers have the perception that the black wool content of Lesotho wool is on the increase, therefore there is a decrease in quality, and thus, lower average prices. The production activity alone yields M503.33 (mutton sales included) in private value and M594.53 in social value. The divergence for the production activity is –M91.20 and this can be attributed to the low domestic farm-gate price for wool. The private output value at the marketing activity is M182.34 compared to the social output of M213.34, which resulted in a negative divergence of M31.00.

Private output for the total non-shearing shed system yields M354.96 per LSU compared to social output of M444.53 per LSU. The output divergence in this case is –M89.58 which is the result of the low farm-gate prices received by farmers.

A negative output transfer suggests distorting policies or imperfect markets that impact negatively on private prices. In the case of the Lesotho wool system, the negative divergence can be attributed to the following two reasons:

- The licensing policy of traders and the lack of competition amongst them might contribute toward monopolistic behaviour amongst traders; and
- buyers discriminate against Lesotho wool at international auctions.

- **Private profitability: (D = A – B – C)**

Private profitability is the difference between observed prices (revenues) and costs. It measures private profitability and incorporates all the underlying economic costs and valuations plus the effects of all policies and market failures. It shows the competitiveness of the system, given the current technologies, output values, input costs and policy transfer. The calculated value of M178.38 per LSU for shearing shed farmers and M79.79 per LSU for non-shearing shed farmers, is an indication that farmers indeed make profits, albeit very small. It should be mentioned that management fees are not included in the gross margin calculations, with the result that these amounts are the only cash available for living expenses. Most farmers indeed confirmed that these profits are used to cover living expenses. The relatively small profits mean that farmers do not earn enough returns to expand their production in the future, unless other factors allow for possible expansion. Factors that might stimulate expanded production include the following: the improvement of productivity, the improvement of the quality of rangelands, better climatic conditions and the improvement of overall animal husbandry practices and a dramatic increase in product prices.

Private profit for the shearing shed and marketing activity alone is also positive with M57.03 per LSU. This indicates that farmers benefit from their participation in the shearing shed system, since it increases their profits from M121.35 to M178.38 per LSU. The result for the production activity alone is M121.31 per LSU, which is also an indication of competitiveness at the production level. It is clear from these results that the shearing shed activity contributes significantly towards the net result, signifying that the competitiveness of the wool system in Lesotho indeed increases as a result of the shearing shed system.

- **Social profitability: (H = E – F – G)**

Social profitability is the difference between social revenues and social costs. The calculated figure of –M5.61 per LSU shows that the production activity of the shearing shed wool system is not efficient. The social profitability valuation of the marketing activity is also negative with –M14.09; also an indication that this is again an inefficient activity. The dipping levy and the subsidised support from LPMS contributed toward this negative result, and one can therefore argue that inefficiency in this activity is the result of distorting policies. The dipping fee is levied on wool sales at the marketing activity. To address this problem, the government should levy dipping fees as part of a grazing levy and privatisation of the shearing sheds might increase efficiency in this activity. The net result for social profitability for shearing shed farmers and non-shearing shed farmers are –M19.70 and –M79.79 per LSU respectively; an indication that both wool systems in Lesotho are inefficient and have no comparative advantage in the world market. The results also clearly show that the non-shearing shed system is far less efficient than the shearing shed system.

Pearson *et al.* (2003) state that economic activities which generate high social profits promote rapid economic growth in a country, and *vice versa*. In the case of the Lesotho wool system, social profits are negative, and the inefficiencies of the wool system in fact restrain economic growth. The wool system is the "flagship" agricultural system in Lesotho, and the only earner of foreign capital in the agricultural sector, yet it demonstrates no social profits. It is therefore inefficient and has no comparative advantage in the world market. The conclusions derived from this result are very disturbing, and need the urgent attention of the Lesotho government and other role players within the wool industry in Lesotho.

- **Tradable input transfer: (J = B – F)**

Tradable input transfer measures the difference between private and social valuations for tradable inputs. Distorting policies and market failures cause large positive divergences, while protectionist policies result in negative divergences. The positive

divergence in the production activity (M38.33) is the result of market failures. Farmers pay more for inputs than the social value of these inputs. This could be attributed to a lack of infrastructure, remoteness of farming areas, monopolistic behaviour from suppliers and the long distances from input suppliers. The marketing activity, conversely, shows a negative divergence (-M2.07), which is an indication of supporting policies or implicit subsidies in this activity. The subsidised support from LPMS is the main contributor here. The net result for the total system is a positive value of M36.26; an indication of market failures that cause higher private input costs.

The non-shearing shed system shows the same result with a positive divergence of M25.20; also an indication of market failures that resulted in higher private values than the corresponding social values.

- **Domestic factor transfer: (K = C – G)**

Domestic factor transfer is the divergence between private and social domestic factors. The private domestic cost for the shearing shed system is M183.58 per LSU in the production activity, and this is mainly attributed to the cost of herd boys. The social domestic cost of M440.08 per LSU consists of costs of herd boys as well as opportunity costs for grazing. The divergence for domestic factors in the production activity adds up to –M256.50. The conditions in the market activity display the same type of result with a negative divergence of –M100.05. The net divergence for the total wool system amongst shearing shed farmers is –M265.34 per LSU. The net divergence for non-shearing shed farmers is –M216.72 per LSU, which is very similar to the results for the shearing shed system.

A negative factor transfer, as is the case here, is indicative of implicit subsidy or transfer of resources in favour of the agricultural system (Monke and Pearson, 2003). The land use system (free grazing) is the largest single contributor to the negative factor transfers in both wool systems in Lesotho. The government support services

provided by LPMS also contribute toward the higher factor divergence in the shearing shed wool system.

- **Net transfer: (L = I – J – K)**

The net transfer is the sum of all divergences and also of the net difference between private and social profits. The net transfer for the shearing shed system at the production activity is M126.96 with M71.12 in the shearing shed and marketing activity, and M198.08 per LSU for the total shearing shed wool system in Lesotho. The net transfer amongst non-shearing shed farmers is M101.95 per LSU.

A positive value as is the case in both systems, suggests implicit subsidies or market distortions in favour of the industry. This permits an inefficient industry. The positive net transfer value is mainly the result of the land tenure system in the country. Tietenberg (2003) clearly states that inefficient property rights systems may lead to over-utilisation of the natural resources, which is indeed the case in the rangelands of Lesotho. The effect of negative market distortions (imperfect markets) as a result of higher private prices for inputs (medicine, feeds and roughage) is overshadowed by the positive distortion caused by free grazing.

The positive net transfer value at the shearing shed and production activity is the result of the support and services provided by LPMS. Private profit in the shearing shed activity increased from a loss of M14.09 to a profit of M57.03 due to the support rendered by the government to the shearing shed system.

The high positive net transfer values for both wool systems are an indication that policies (government support) and distorted markets (property rights) in fact disguise the inefficiency of the Lesotho wool industry. Social profits for both systems are negative, but policy transfers and market failures raise the net private profit to M178.38 and M 79.79 for the shearing shed system and the non-shearing shed system, respectively.

6.6.3 PAM Ratios

Comparisons of input and output divergences between similar agricultural systems with identical outputs are possible if an appropriate exchange rate is used to convert the PAM results to a single currency. However, the comparison of different agricultural systems with different outputs and inputs requires the construction of ratios to compare the unlike products with each other (Monke and Pearson, 1995; Pearson *et al.* 2003). A summary of the different ratios is presented in Table 6.12.

Table 6.12: PAM ratios for the Lesotho wool production, shearing shed/marketing and total system.

Ratio description			Shearing shed activities			Non-shearing shed
		Formula	Production	Marketing	Total	
Private Cost Ratio (PCR)		C/(A-B)	0.60	0.66	0.54	0.68
Domestic Resource Cost Ratio (DRC)		G/(E-F)	1.01	1.07	1.04	1.06
Nominal Protection Coefficient (NPC)	Tradable outputs	A/E	0.85	0.85	0.95	0.80
	Tradable inputs	B/F	1.24	0.88	1.20	1.32
Effective Protection Coefficient (EPC)		(A-B)/(E-F)	0.70	0.85	0.85	0.69
Profitability Coefficient (PC)		D/H	-21.64	-4.05	-9.05	-3.60
Subsidy Ratio to Producers (SRP)		L/E	0.21	0.33	0.31	0.23

The different ratios as obtained from the PAM results are discussed in the next section.

- **Profitability coefficient PC = D/H = (A-B-C)/(E-F-G)**

The PC is an extended measure to accommodate factor transfers and it presents the ratio of private and social profits. The PC measures the degree to which net transfers have caused private profits to exceed social profits. In other words, the PC measures the incentive effects of all policies, and thus serves as a proxy for the net policy transfer. Monke and Pearson (1995) nonetheless note that its usefulness is restricted when private or social profits are negative, since the signs of both entries must be known to allow clear interpretation. However, interpretation of this ratio is not

consequent and accurate if some of the signs are negative, notwithstanding the fact that the signs are known.

The PC for all the activities are negative or <1 and therefore are an indication of an increase in private profitability over and above social profitability, as a result of imperfect markets or direct or indirect subsidies, or policy in favour of the industry.

- **Private cost ratio (PCR) = C/(A – B)**

The PCR is the ratio of the domestic costs to the value added to private prices. The value added is the difference between the value of the output and the costs of tradable inputs. It shows how much the industry can afford to pay for domestic factors including normal returns on capital, and still remain competitive. Higher profits for the farmer can be achieved by reducing private factor costs. A low PCR is an indication of higher private profits and the opposite is also true, because a high PCR is indicative of lower private profits (Monke and Pearson, 1995).

The ratio of PCR = 0.60 in the production activity and PCR = 0.66 in the marketing activity is an indication that farmers make profits in both activities of the shearing shed system. The PCR for the total shearing shed system is 0.54, indicative of good private profits, since PCR = 1 represents zero profit and PCR > 1 represents net losses. In this case PCR < 1 equals profit.

The PCR for the non-shearing shed system is 0.68 which is higher than the 0.54 for shearing shed farmers. This is an indication that non-shearing shed farmers also make a profit, albeit smaller than profits made by the shearing shed system.

- **Domestic resource cost ratio (DRC) = G/(E – F)**

The DRC is a summary measure of the relative efficiency and comparative advantage of domestic production. The domestic resources and non-traded inputs are valued at opportunity costs or shadow prices in relation to net foreign exchange earned or saved by producing the goods domestically. It serves as a proxy measure for social profits.

A DRC smaller than one indicates that the economy is saving or earning foreign exchange from local production, because the opportunity costs of its domestic resources are less than the net foreign exchange it gains in exports. Minimising the DRC is equivalent to maximising social profits. This gives an indication of the relative degree of efficiency or comparative advantage achieved.

The DRC in the case of shearing shed farmers is 1.01 for the production activity, 1.07 for the shearing shed and marketing activity, and 1.04 for the total shearing shed system. The DRC for the non-shearing shed farmers is 1.06; also > 1. These results signify inefficiency at both activity levels, as well as for the total wool sheep system for shearing shed and non-shearing shed farmers. This result confirms the conclusion derived from the social profitability divergence, namely that the wool system is inefficient and has no comparative advantage in the world market under present production output level. It also indicates that the economy loses foreign exchange from local production, because the opportunity costs of its domestic resources amount to more than the foreign exchange gained.

- **Nominal protection coefficient on output (NPCO) = A/E**

The NPCO ratio shows how much private output prices differ from social output prices. Past studies in developing countries have found that market failures influencing outputs are rare (Pearson *et al.* 2003). The result of this study though, leans toward market distortions at the shearing shed system. The NPCO for the total shearing shed system is 0.95 which can be attributed to the discriminating behaviour of buyers against Lesotho wool at international auctions in South Africa.

A ratio of 0.80 is evident for non-shearing shed farmers and this might be attributed to the monopolistic behaviour of licensed traders, as a result of protectionist policies (licensing of traders). The licensing policy applicable to traders could be one of the reasons responsible for the difference in wool prices at farm-gate level and for non-shearing shed farmers. An NPCO of 0.95 in the shearing shed system compared to 0.80 in the non-shearing shed system is an indication of lower inefficiency at the

output level of the shearing shed system than at that of the non-shearing shed system. Farmers would therefore benefit by marketing through the shearing shed system.

- **Nominal protection coefficient on inputs (NPCI) = B/F**

The NPCI ratio shows how much domestic prices of tradable inputs differ from their social prices. If the NPCI exceeds one, the domestic input cost is higher than the input cost at world prices, and the system is taxed due to policy, or burdened with imperfect markets. If the NPCI is less than one, the domestic price is lower than the comparable world price, and the system is subsidised due to policy or supported by imperfect markets (Monke and Pearson, 1995; Pearson *et al.* 2003).

A NPCI in the production activity of 1.24 suggests that policies or imperfect markets increase tradable input costs by 24% above world (South African) prices. The contributing factor in this distortion is mostly imperfect markets, because of the lack of infrastructure to ensure sufficient stock in the rural areas, and therefore the lack of competition amongst input suppliers.

The NPCI at the shearing shed and marketing activity of 0.88 suggests that policies support this activity to a large extent. An NPCI on inputs of 1.20 for the total system suggests that policies or imperfect markets cause an increase in tradable input costs of 20% above world prices. Contributing factors to this distortion are imperfect markets because of the remoteness of rural areas, the lack of suppliers and the shortage of infrastructure to ensure sufficient stock being sold at comparable world (South African) prices.

- **Effective Protection coefficient (EPC) = (A – B)/(E – F)**

The EPC is the ratio of the difference between revenues and tradable input costs in private prices to that of social prices. It compares value added to domestic prices with value added to world prices. The purpose of the EPC is to show the joint effect of policy transfers affecting both tradable outputs and inputs. An EPC greater than one means that private profits are higher than they would be without commodity

policies. An EPC of less than one is an indication of policies that alter prices in product markets to reduce private profits (Pearson *et al.* 2003). The EPC is a useful measure of the combined effects of commodity price policies, but it does not account for any effects of policy in factor markets (Monke and Pearson, 1995).

The calculated ratio in the production activity is 0.70, which is the ratio of the value added to private prices in comparison to world prices. It means that the combined effect of policies (input and output) has a 30% negative impact on tradable private prices in the production activity. An EPC of 0.85 in the marketing activity indicates a 15% negative impact on tradable private prices for this activity. The combined EPC for the total shearing shed system is 0.85, an indication that distorting markets and policies cause the private profits to be 15% lower than they would have been at world (South African) prices, and under perfect market conditions without any policy interference.

The EPC for the non-shearing shed system is 0.69, an indication that private profit is 31% lower than world (South African) profits under perfect market conditions. This result is confirmation of previous results, namely that higher private profits can be made in the shearing shed system than in the non-shearing shed system.

- **Subsidy ratio to producers (SRP) = L/E**

The SRP measures the net policy transfer as a proportion of total social revenues. It shows the proportion of revenues in world prices that would be required if a single subsidy or tax were substituted for the entire set of commodity and macro-economic policies. The purpose of this indicator is to show the level of transfers from divergences as a proportion of the undistorted value of the system revenues. If market failures are not an important component of the divergences, the SRP shows the extent to which a system's revenues are increased or decreased due to policy.

The SRP for the production activity is 0.21, with 0.33 for the shearing shed and marketing activity, 0.31 for the total shearing shed system and 0.23 for the non-shearing shed system. These results mean that divergences have increased the gross

revenues of the production activity by 21%, the shearing shed and marketing activity by 33% and the total shearing shed system by 31%. Gross revenues in the non-shearing shed activity increase by 23% according to this result. The higher SRP in the shearing shed activity is a clear indication that shearing shed farmers benefit from the shearing shed system, because of positive policy intervention (Mainly subsidised services from LPMS). The argument that the large-scale farmers at the shearing sheds receive more subsidies and support from government is therefore proved to be true.

6.7 CONCLUSION

The results portrayed in this chapter indicate that farmers indeed make profits from the wool system, but at a cost to the country. It is very clear that the shearing shed farmers make better profits per LSU, and therefore also per farming unit, than non-shearing shed farmers. The importance of the shearing sheds as an activity that increases profitability for farmers was also highlighted. The results clearly show that farmers benefit tremendously through their participation in the shearing shed system.

Important however, is the fact that the results also point out that the wool system in Lesotho is not efficient and has no comparative advantage at all. This means that the economy loses foreign exchange from local production, because the opportunity costs of its domestic resources are more than the foreign exchange it gains. This is in total contrast to what the industry and government believe, since they regard wool production as the flagship of all the agricultural systems in the country, as well as the largest earner of foreign capital in the agricultural sector. The dilemma for the Lesotho government therefore, is to make a policy decision with regard to its support of the wool system, and policies affecting the wool system.

According to the optimal policy choice graph developed by Monke and Pearson (1995) and illustrated in Fig 6.2, the wool system is located in quadrant III with national income as well as the non-efficiency objective smaller than zero ($H<0$; $X<0$).

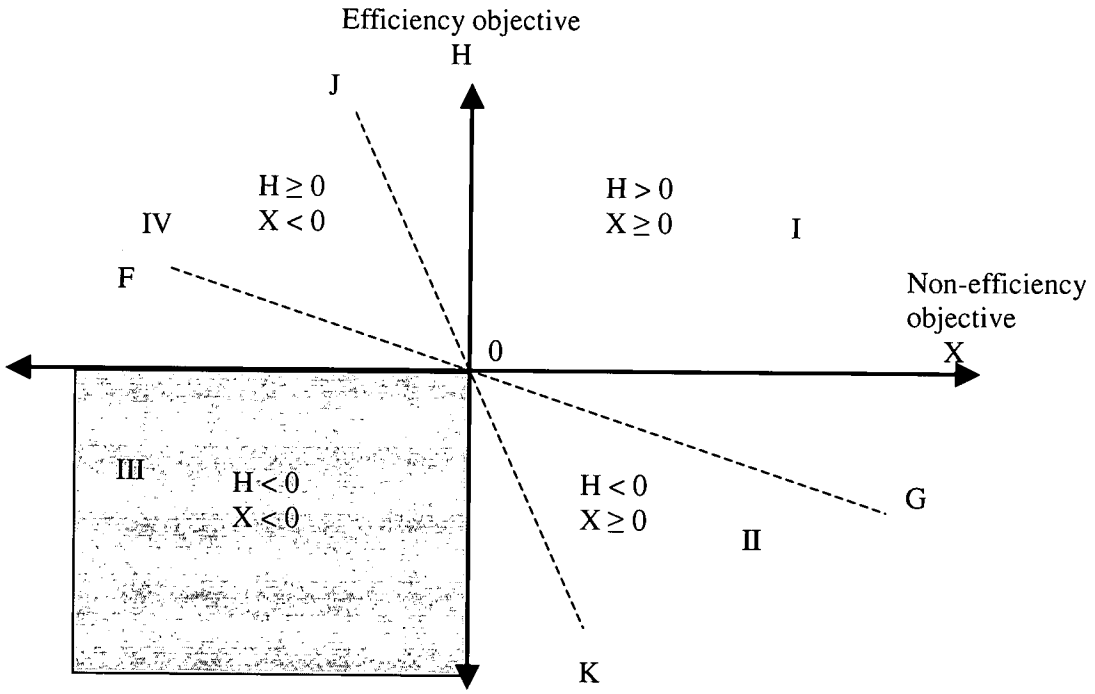

Figure 6.2: Optimal policy choice with multiple objectives (Monke and Pearson, 1995)

Monke and Pearson (1995) note that policy-makers should discourage such systems, since they lead to a reduced national income and do not encourage the efficiency objective. With this information in mind, it would normally be reasonable to advise policy-makers not to support the wool system any more. The fact of the matter is that wool production in Lesotho is far below its potential (discussed in Chapter 4) and that better results could be achieved with a slight increase in production.

Notwithstanding the results and the implications thereof, policy-makers should be very cautious in their approach to the wool system in Lesotho. Private profits are already higher than social profits (an indication of net policy incentives), and additional policy incentives could cause decreased efficiency. The wool industry itself should act on the challenge to increase efficiency and competitiveness. Pearson *et al* (1995) and Kay and Edwards (1999) state that the efficiency of agricultural systems may be improved with better allocation of scarce resources, or higher production from the same scarce resources. The results clearly show that both wool systems are inefficient. The impact of higher production output levels on social profitability were tested, and it was found that a 10% increase in wool and mutton

production proved to be sufficient to achieve positive social earnings. The results of an increase in production are shown in Table 6.13.

Table 6.13: Impact of increased production outputs on gross margins, net social profit and DRC at the shearing shed and non-shearing shed system.

	Shearing shed system			Non-shearing shed system		
	Gross margins	Net social profit	DRC	Gross margins	Net social profit	DRC
Standard	160.56	-19.70	1.04	67.86	-22.16	1.06
10% increase wool production	176.35	-2.15	1.00	74.98	-5.20	1.01
20% increase in wool production	192.15	15.40	0.97	82.09	11.77	0.97
10% increase in meat production	199.86	19.60	0.96	94.55	4.52	0.99
20% increase in mutton production	239.16	58.90	0.89	121.23	31.20	0.93
10% increase in both wool and mutton production	215.66	37.15	0.93	101.66	21.49	0.95
20% increase in both wool and mutton production	270.76	94.00	0.84	135.45	65.13	0.86

It is shown in Table 6.13 that an increase of 10% in wool production alone is not sufficient to generate a positive social profit or a DRC < 1. A 10% increase in mutton production nonetheless proved to be sufficient to obtain positive social profits, and therefore to ensure that the wool system has a comparative advantage in the world market. Teba Developers obtained up to a 30% increase in wool production after only one year of their involvement, and this shows that the wool industry has the potential for increased production from its present levels, in order to gain a competitive advantage in the world market. The Lesotho government should therefore increase its efforts to supply the necessary extension and support at the production level of both the shearing shed and non-shearing shed systems. Factors to achieve this objective have already been discussed in Chapter 4 of this study.

The gross margin for the wool system under the present production level is very low, and it is clear from the results in Table 6.13 that gross margin sensitivity is higher for mutton outputs than changes in wool output. Wool producers could therefore expect to obtain better profits with an increase in mutton production, than with an increase in wool production. The best option, though, is to increase the level of production for both wool and mutton.

For many decades sheep farmers in Lesotho have focused on wool production from Merino sheep. This line of action has been promoted and supported by the extension workers, the Department of Field Services and LPMS, since they allow only the shearing of Merino sheep (and Angora goats) at the shearing sheds. The results of this study undoubtedly reveal the inefficiency of the present wool system, as well as the influence of mutton production on gross margins. This study does not suggest that wool farmer with merino sheep *per se* is inefficient, but it highlights the inefficiency of the present production system. It is therefore imperative that the small stock farmers in Lesotho review their breeding programmes and production practices to increase efficiency. Maybe it is time that selection programmes in Lesotho should put more emphasis on the breeding of sheep (whether it be wool sheep or mutton sheep) with higher mutton yields, together with other measures (as discussed in Chapter 4) to increase production. This should be managed in concurrence with other measures to increase productivity as recommended in Chapters 4 and 5.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 INTRODUCTION

Lesotho is a small under-developed country with limited resources to sustain its population. Several developing countries however, (especially Asian countries) during the past few decades, have managed to achieve economic growth and poverty alleviation by means of growth-inspiring policies and increased production levels. It is clear from the literature study that multiple facets are embedded in the dynamics of economic growth. Some of these elements are already present in the Lesotho economy; others should be rearranged and development programmes should endeavour to impose sustainability. The literature clearly shows that all successful development policies have a holistic and comprehensive approach that addresses various issues and sectors simultaneously. The potential (natural, human, economic, etc.) exists in Lesotho for creating a vibrant economy which can support its population. Important though, is that the economic systems in the country must be competitive, efficient and sustainable.

The agricultural sector and more specifically, the livestock sector in Lesotho can provide the necessary stimulus for growth in the country, provided that it is competitive, efficient and sustainable. Issues that might increase the efficiency and competitiveness of the livestock sector system include the following:

- Revitalising of the small-holder section. Small farmers should be encouraged to produce efficiently with resources at their disposal.
- Supplying infrastructure and rural services. Micro-cooperatives based on the shearing shed structures could contribute significantly to increase the competitiveness of the wool farmers.
- Unleashing markets and trade opportunities.

- Improving agricultural research and extension. The extension services in particular, should focus more prominently on the sustainable utilisation of natural grazing and increase of production outputs.
- Developing human capital and institutions. Training through extension services and other organisations should increase its efforts to train farmers and empower them to manage their own affairs.
- Strengthening community and producer based organisations. Farmers should organise themselves into organisations at community level to address issues such as the over-exploitation of the natural resources, stock theft, and all relevant issues that contribute towards efficiency.

Nearly all the under-developed and developing countries rely on extensive livestock systems for the support of the majority of their poor and rural people; Lesotho is no different in this regard. The Lesotho government and the agricultural community regard the wool system as the "*flagship*" and sole (with mohair) earner of foreign capital in the agricultural sector. The study indeed reveals that the wool industry is the only earner of foreign capital (and cash) for rural people in Lesotho. The study also shows that the wool industry presents good local and international opportunities for future growth.

The dependence of the Lesotho wool system on the South African wool industry has been emphasised, and it is clear that this relationship benefits the Lesotho industry, since Lesotho shares in the benefits (economies of scale, information systems, the international auction system, etc.) of the larger wool industry in South Africa.

It also became clear during the study, that the biggest problems and challenges in the wool industry are located at the production level. Both technical and economic efficiency is lacking within this sector. The efficiency of the total industry should increase dramatically, if farmers can address the production challenges. Trade and marketing, on the other hand, need only some minor adjustments to become and stay economically efficient.

7.2 PRODUCTION CHALLENGES

The major issues contributing towards the low production and profitability margins of the wool system were found to be feeding, the decline in small stock numbers, the quality of genetic material and health control. The study reveals that the number of productive units (sheep) as well as the output per unit has shown a dramatic decrease during the past forty years, and this downward trend is still continuing. Low reproduction rates, poor feeding conditions and stock losses (stock theft and mortalities) are at the core of these problems.

The study did not endeavour to determine and prioritise production obstacles empirically, but all of it became clear at the workshops and during the survey and interviews with farmers and extension officers. The rangelands in Lesotho are in a very poor condition, despite the presence of scientifically founded management policies and plans. It seems however, that very few of these are implemented at grassroots level. The potentially harmful effect on the environment as a result of unsustainable resource use practices, poses a serious threat to the environment and with it; an additional challenge to the extension services who hold the key to providing stockowners and herders with the necessary knowledge to manage the rangelands in a sustainable manner. The study concluded that if this issue is not addressed adequately, the wool system can become an encumbrance instead of an engine of growth for the Lesotho economy. Also contributing to the poor feeding conditions, is the resistance of farmers to supply their flocks with the necessary supplements and additional feed when needed.

The other equally important factor that surfaced as critical for the long-term sustainability of the wool system in the production activity, is the decline in sheep numbers due to stock theft, low reproduction rates and high mortality rates. Reproduction is 37% of the total adult stock numbers, and losses due to mortalities and stock losses add up to 22% (theft – 9%, mortality – 8%, predators – 3%, lost – 2%) of total flock. This leaves farmers with only a net offspring of 15 per 100 adult sheep per year. The genetic pool to select from becomes therefore, non-existent.

Stock theft as one of the contributing factors to the decline in small stock numbers was also discussed in the study. The study concluded that local communities can contribute to curb the problem, but that government should empower and support them through proper institutional structures that secure the participation of all relevant government departments and community structures.

The study also reveals the decline in wool quality due to an increase in black wool content. Some farmers from South Africa supply quality rams to Lesotho farmers, but some of the rams inspected were found to have signs of black wool content. The quality of some rams used in breeding programmes is therefore questionable. The wool traders indicated that the perception is created amongst wool buyers that the Lesotho clip is contaminated with black wool, and this influences the price of Lesotho wool negatively.

7.3 THE TRADE AND MARKETING OF WOOL

The three main marketing structures in Lesotho are the shearing sheds, licenced traders and unlicenced traders (smugglers). All three marketing channels respond to the specific needs of their clients. The study suggests that a monopoly has been formed by the licenced traders during the past years, and that the unlicenced traders are presently threatening the existence of this monopoly to the advantage of the producers. Several scenarios and possibilities regarding the possible future marketing systems were discussed in the study, and the study clearly shows that the shearing shed system forms the backbone of the wool industry in Lesotho. Nearly 70% of the total wool clip is marketed through the shearing sheds at competitive world prices, compared to a non-shearing shed price that equals only about 50% of the price paid at the shearing sheds.

The difference between the shearing shed farmers and the non-shearing shed farmers in terms of exposure to information and training programmes, flock sizes, technical and economic efficiency and input and output levels, was highlighted in the study. Shearing shed farmers are far better informed and better trained, and they make much more use of services and technology than the non-shearing shed farmers. Shearing shed farmers also have, on average, twice the number of animals than the non-shearing shed farmers, and their efficiency and

productivity levels are also much higher. The study highlighted the importance of an institutional structure such as the shearing shed system to the wool industry, and concluded that government should privatise the shearing shed structure in a cautious manner. The implementation of a micro-cooperative or similar structure in the rural areas should accompany the privatisation process, in order to ensure better institutional capacity at grass-roots level. The shearing shed infrastructure could serve as a foundation for the development of a farmer-controlled structure (micro-cooperatives) to address their needs at local level. It has been pointed out though, that government must support farmers to phase this process in, according to their capacity to manage the proposed structures. Sudden withdrawal by the government will seriously harm the efficiency of the marketing system.

The advantages and shortcomings of the different marketing systems as perceived by the producers were revealed in the study, and it transpired that the implementation of proper administrative procedures and the use of new technology should rectify most of the shortcomings of the shearing shed system. It became clear that the advantages overshadow the disadvantages by far, and several recommendations regarding the future of the shearing sheds were highlighted in the study.

The efficiency of the LPMS was evaluated and it transpired that the LPMS should evaluate its own role in the rural areas. Transferral of the shearing shed duties of the LPMS to the department of Field Services is one of the recommendations impacting on the services of the LPMS. The study recommends that the LPMS should continue with the marketing and liaison with the international (South African) wool community. Preparation of the clip at the shearing sheds however, should not be their responsibility.

It also became evident in the study that the dramatic increase in prices during the 2002/2003 season created a false perception regarding the profitability of the wool industry, since the real prices for this year were in actual fact about the same as the average real value for the past 20 years. The change in the exchange rate was mainly responsible for this increase in price.

International standards play an increasingly important role in all economic sectors and the importance and compliance of classing standards for wool were highlighted. The eco-labelling of wool as an important future requirement for the export of wool to Europe, was also addressed. It has transpired that it will become more important in future to adhere to international phyto-sanitary and other regulations if one wants to compete in international markets. The problem with regard to soil erosion and land use patterns might endanger the chances for the Lesotho wool clip to obtain eco-label status, and this was also highlighted in the study.

7.4 POLICY ANALYSIS

The study evaluated the Lesotho wool system at the hand of an empirical estimation of a policy analysis matrix. Gross margin calculations for the shearing shed farmers show a margin of only M160.56 per LSU per year compared to M75.96 for non-shearing shed farmers (Average real values for the past five years were used for these calculations). This in itself is an indication that the shearing shed system has an advantage over the non-shearing shed system. Only direct costs were used in the calculation for gross margins. Opportunity costs for grazing and family labour (excluding herd boys) are not included in these calculations. Inclusion of family labour or management fees might result in negative values (loss) for both systems. The lack of any bookkeeping system and reliable records amongst producers concerning input costs encumbers the calculation of gross margins.

The PAM analysis exposes the inefficiency of the wool system and also shows that the system has no comparative advantage in the world market at all. In contrast to the notion that the wool system is an earner of foreign capital, the PAM analysis indicates that the economy in fact loses foreign exchange from local wool production, because the opportunity cost of its domestic resources is more than the foreign exchange it gains (DRC>1) and social profits are negative for both systems. This type of result can create a dilemma for policy makers. According to Monke and Pearson (1995), policy makers should discourage systems with a DRC>1, since they decrease national income, and do not encourage the efficiency objective. One would therefore normally advise policy makers in Lesotho not to support the wool system any more.

Despite the results and the implications of the results, policy makers in Lesotho should be very cautious in their approach to discontinue or increase support for the wool systems. Private profits are already higher than social profits (an indication of net policy incentives), and new policy incentives will only decrease efficiency. The wool industry itself should act on the challenge to increase efficiency and competitiveness. The most efficient way to achieve this, is through an increase of efficiency in the production activity. The results of this study clearly show that the lack of efficiency is located in both wool systems. The gross margin for the wool system is very low and it was pointed out that gross margin sensitivity is much higher for mutton outputs than changes in wool output. Wool producers could therefore expect to obtain better profits with an increase in meat production than for an increase in wool production. Results obtained and discussed in Chapter 4 however, stressed that the wool system produces far below its potential. The PAM results show that an increase of only 12% in wool production alone, results in a DRC=1 which is the value when foreign exchange earnings equal domestic resources cost. It is encouraging to notice that some Lesotho producers obtain large increases in production with small management adjustments. This should encourage the Lesotho government to increase its support for the wool system at the production level by introducing the measures proposed in this study. These adjustments should make the wool system more efficient, and it would secure the necessary comparative advantage to ensure that the wool system plays its rightful role in stimulating the Lesotho economy.

For many decades sheep farmers focused on wool production from merino sheep. This has been promoted and supported by the extension workers, the Department of Field Services and the LPMS, since they only allow the shearing of merino sheep at the shearing sheds. The results of this study undoubtedly revealed the inefficiency of the wool system as well as the influence of mutton production on gross margins. Wool producers should therefore adopt an approach to select and breed for mutton production without neglecting wool quality and quantity. The practice to shear only merino wool at the shearing sheds should be reviewed. Shearing sheds should receive all types of white wool. This will open the opportunity for farmers to change to other breeds such as the SA Mutton merino, with lower quality wool,

but a much higher potential for mutton production and higher profits. More research though is needed to estimate the exact impact of such a shift in production.

7.5 SUMMARY OF RECOMMENDATIONS

A summary of the recommendations is tabled in Appendix A. The recommendations in Appendix A deal with the following:

- Strategies to address the poor feeding status of livestock
- Strategies to maintain quality and quantity in national small stock numbers
- Strategies for the improvement of genetic material
- Strategies and actions needed for health control
- Strategies for improvement in shearing shed structure
- Strategies with regard to the alternative marketing structures
- Government support interventions needed

7.6 RECOMMENDATIONS FOR FURTHER RESEARCH

It has been stated in the first chapter that the RRA used as part of the research methodology endeavours to get the bigger things right. This is exactly what this study intended to achieve. Fine tuning of the total wool system is only possible with detailed information on further issues. These include the following:

- Exactly what a sustainable rangeland management system should entail, and how it should be managed. The deterioration of Lesotho's rangelands is at the core of the poor performance of the wool production system. Lesotho cannot allow this to continue, since soil erosion and the quality of the rangeland have already taken on disastrous proportions. Very good management plans exist, but they are never properly implemented. Further studies should investigate the reasons for the lack of implementation, and supply answers as to what can be done to motivate livestock farmers to implement these management strategies.
- This study recommends that the government should privatise the shearing shed system, and that farmers should take ownership via a micro-cooperative or similar

system. The exact structure, its responsibilities, management structures and all issues surrounding the proposed structure is in need of additional research. A negative perception regarding cooperatives exists amongst Lesotho farmers. The causes of this should be investigated, as well as methods to rectify the situation. Cooperatives play an important role in the development process of developing countries, and further studies should be promoted to assist the Lesotho farmers to establish and manage their own cooperative systems in a sustainable manner. Issues such as financing (cooperative banking), input supplies and marketing (shearing sheds) should be incorporated into a proposed structure. Further studies could assist the industry with detailed information with regard to implementation, management, budgeting, and training needs.

- Teba Developers obtain spectacular results with their development programme where they make use of South African wool farmers as mentors to Lesotho wool farmers. The reasons and strategy behind this success and possible expansion of this programme need further investigation
- The impact on the wool industry if farmers change from wool to mutton production, and what the optimal combination should be, needs to be assessed. This study only suggests that a shift of emphasis toward mutton production could increase profitability, but the actual impact is not estimated by means of empirical evidence. Further studies focusing on this issue could assist the industry to optimise its decisions in this regard.

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APPENDIX A

QUESTIONNAIRE

All information provided will be treated as STRICTLY CONFIDENTIAL

AN ANALYSIS OF THE WOOL AND MOHAIR SYSTEM IN LESOTHO

1. GENERAL INFORMATION

1.1	DATE OF INTERVIEW	
1.2	DISTRICT	
1.3	PRODUCERS ORGANIZATION	
1.4	NEAREST SHEARING SHED	
1.5	NEAREST VILLAGE	
1.6	NEAREST TOWN	
1.7	NAME OF EXTENSION OFFICER	

2. PRODUCTION

2.1 Type of farming (Name one)

2.1.1	Mixed	
2.1.2	Sheep & Goats	
2.1.3	Cattle	
2.1.4	Crops	
2.1.5	Horticulture	

2.2 Small stock breeds

		Breed	Total numbers
2.2.1	Sheep (Merino)		
2.2.2	Goats		
2.2.3	Other		

2.3 Small stock numbers

2.3.1	**Sheep**	Ewes	
		Lambs	
		Rams	
2.3.2	**Goats**	Ewes	
		Lambs	
		Rams	

2.4 Breeding material - Rams

2.4.1	**Ram ownership**	Own rams	
		Borrow ram from neighbour	
		Own rams as a group	
		Rams supplied by government	
2.4.2	**Where do you obtain/purchase your rams?**	Own breeding	
		Neighbouring farmers	
		Ram breeders in Lesotho	
		Ram breeders in South Africa	
2.4.3	**If you do not use registered rams, why not? Prioritize first three most important reasons**		
	Male breeding stock are too expensive		
	Have no money (cash) available to buy male breeding stock		
	Cannot get credit to buy male breeding stock		
	Male breeding stock is not easily accessible		
	Have no transport to get the male breeding stock to my farm		
	The transport is too expensive to get the male breeding stock to my farm		
	Male breeding stock will not have a large enough effect on my reproduction levels to pay for the extra expenses		
	It will increase the production risk of my farm		
	It will increase the financial risk of my farm due to higher debt		
	Decent male breeding stock is not freely available		
	Do not know where to get rams		
	Other (specify)		
2.4.4	**Do you want to use registered rams?**		
2.4.5	**If "yes", why? Prioritize.**		
	Will improve lamb %		
	Will improve weight of lambs		
	Will improve quality of wool/mohair		

2.5 Sheep Management reproduction

2.5.1	**Lambing season**	Whole year	
		Spring (Sept – Nov)	
		Autumn (Dec – Feb)	
		Summer (Mar – May)	
		Spring and Autumn	
	Amount of lambs born per year		
	Amount of lambs weaned per year		
	Amount of ewes sold per year		
	Amount of lambs sold per year		
2.5.2	**Losses per year because of:**	Theft	
		Died because of illness	
		Predators (Jackalls etc.)	
		Lost (unexplained reasons)	

2.6 Goat management - Reproduction

2.6.1	**Lambing season**	Whole year	
		Spring (Sept – Nov)	
		Autumn (Dec – Feb)	
		Summer (Mar – May)	
		Spring and Autumn	
2.6.2	**Reproduction**	Amount of lambs born per year	
		Amount of lambs weaned per year	
		Amount of ewes sold per year	
		Amount of lambs sold per year	
2.6.3	**Losses per year because of:**	Theft	
		Died because of illness	
		Predators (Jackalls etc.)	
		Lost (unexplained reasons)	

2.7 Management - Disease control

2.7.1	**Do you make use of a program for external parasite (ticks), internal parasite, disease control vaccines or general medication?**		Yes	
			No	
2.7.2	If "yes", indicate the name of the remedy as well as the number of times per year in the applicable square.			
	Type of medication	**Name of remedy**	**Sheep**	**Goats**
	External parasite control (Ticks) (e.g. Deadline)			
i				
ii				

iii				
iv				
	Internal parasite control (e.g. Ranide, Valbazen)			
i				
ii				
iii				
iv				
	Disease vaccination control (e.g. Pulpy Kidney, Brucelosis. etc.)			
i				
ii				
iii				
iv				
	General medication (e.g. Terramycin, Eye powder, etc.)			
i				
ii				
iii				
iv				
	Traditional remedies (e.g. Natural plants)			
i				
ii				
iii				
iv				

2.7.3 If you do not use the above in your sheep flock, please indicate as many reasons as applicable, why not.

		External parasites	Internal parasites	Disease vaccination	General
i	The remedies are too expensive				
ii	Have no money (cash) available to buy the remedies				
iii	Cannot get credit to buy the remedies				
iv	The remedies are not easily accessible				
v	Have no transport to get the remedies to my farm				
vi	The remedies will not have a large enough effect on my reproduction levels to pay for the extra expenses				
vii	It will increase the production risk of my farm				
viii	It will increase the financial risk of my farm due to higher debt				

ix	Am involved in organic farming				
x	Cultural reasons				
xi	Difficult to use and handle				
xii	The remedies are not freely available				
xiii	Do not know how to use remedy				
xiv	Do not know there is a remedy				
xv	Other (specify):				
2.7.4	**If you do not use the above in your goat flock, please indicate as many reasons as applicable, why not.**				
		External parasites	Internal parasites	Disease vaccination	General
i	The remedies are too expensive				
ii	Have no money (cash) available to buy the remedies				
iii	Cannot get credit to buy the remedies				
iv	The remedies are not easily accessible				
v	Have no transport to get the remedies to my farm				
vi	The remedies will not have a large enough effect on my reproduction levels to pay for the extra expenses				
vii	It will increase the production risk of my farm				
viii	It will increase the financial risk of my farm due to higher debt				
ix	Am involved in organic farming				
x	Cultural reasons				
xi	Difficult to use and handle				
xii	The remedies are not freely available				
xiii	Do not know how to use remedy				
xiv	Do not know there is a remedy				
xv	Other (specify):				

2.8 Management – Veterinary services

2.8.1	**Do you make use of veterinary surgeon services for sheep and goats?**	Yes	
		No	
2.8.2	**If "yes"**	Only when sheep or goats become sick	
		On a frequent basis	
2.8.3	**If veterinary surgeon services are used on a frequent basis, indicate how many times per year.**		
2.8.4	**If you do not make use of veterinary surgeon services, please indicate as many reasons as applicable, why not.**		
i	Veterinary surgeon services are too expensive		
	Have no money (cash) available to afford veterinary surgeon services		
iii	Cannot get credit to make use of veterinary surgeon services		
iv	The veterinary surgeon services are not easily accessible		
v	Have no transport to get the sick livestock to veterinary surgeon services		
vi	The veterinary surgeon services will not have a large enough effect on my reproduction levels to pay for the extra expenses		
vii	It will increase the production risk of my farm		
viii	It will increase the financial risk of my farm due to higher debt		
vix	Am involved in organic farming		
vx	Cultural reasons		
vxi	Other (specify)		

2.9 Feeding

2.9.1	**Do you make use of licks during**	Winter	
		Summer	
		Never	
2.9.2	**Type of licks. Identify with "W" for winter and "S" for summer**	Salt	
		Salt & Phosphate	
		Winter lick	
2.9.3	**Do you supply extra feeding?**	Winter	
		Summer	
		Never	
2.9.4	**Type of feeding. . Identify with "W" for winter and "S" for summer**	Green fodder	
		Roughage (Eragrostis)	
		Creep feeding for lambs	
		Energy supplements (Maize)	

3 Wool & Mohair production

3.1 Do you apply a specific shearing time?		Yes	**When?**	
		No		
3.2	**If "no", why not?**			
	Shearing facilities			
	Make use of shearing shed			
	Own facilities	Electrical		
		Hand shearing		
		In shed		
		Outside		
		Good classing facilities		
	Sorting	Self sorting – 2 classes		
		Self sorting – 3 classes		
		Self sorting according standards		
		Shearing shed		
		Do not sort		
	Do you know how to sort your own wool?			
	Did you receive any training on the following		**Sheep/Wool**	**Goats/Mohair**
	Sorting			
	Shearing facilities and standards			
	Marketing			
	Small stock reproduction			
	Feeding			
	Disease management			

4. Marketing

4.1	**Where do you market (Name buyers).**	**Wool**				
		Mohair				
4.2	**How far is your buyer from your farm?**					
4.3	**Quantities produced**	**Bales**		**2002**	**Wool**	**Mohair**
		Bags		**2001**		
		Kg		**2000**		
				1999		
4.4	**Income – Wool & Mohair**			**2002**	M	M
				2001	M	M
				2000	M	M
				1999	M	M

4.5	**Income – Livestock sales**	**2002**	M	M
		2001	M	M
		2000	M	M
		1999	M	M
4.6	**Did you received market related prices last year?**			
4.7	**Why do you prefer to market your wool & mohair through your present agent? Prioritize three most important to you.**			
i	I trust them			
ii	I usually do business with them			
iii	They supply me with inputs (Medicine, feeds, fertilizer etc.)			
iv	They pay me immediately			
v	I receive good prices			
vi	They are nearby			
vii	They are the only agents in my region			
viii	They collect the products on my farm			
4.8	**What marketing problems did you experience?**			
i	I am far from the markets			
ii	I cannot sort my wool & mohair			
iii	I receive bad prices comparing to others			
iv	I have to wait too long for my money			
v				
4.9	**Are you informed about the following?**		**Wool**	**Mohair**
i	International wool & mohair prices			
ii	Producer prices for wool or mohair in RSA			
iii	Producer prices for wool or mohair in Lesotho			
iv	Types of product needed for			
v	Sorting standards			
vi	Marketing alternatives			
vii	Marketing arrangements with RSA			
viii				
4.10	**If you are informed regarding prices. Who keep you informed?**			
i	Agents			
ii	Radio			
iii	Newspapers			
iv	Extension officer			
v	Shearing shed officials			
vi	Neighbours			

4.11	**What are the main characteristics that you expect from your marketing agent? Prioritize.**		
i	Accessibility (Delivery point must be nearby)		
ii	Must supply shearing services		
iii	Must supply sorting facilities		
iv	Must be able to pay out immediately		
v	Must keep us informed of international prices		
vi	Must give some training		
vii	Must be able to supply inputs in exchange for wool/mohair		
4.12	**Who must control marketing of wool & mohair**		
		Government	
		Private agents	
		Producers	
4.13	**Why should the above group control marketing?**		
4.14	**Is the system of licensed agents to your advantage**	Yes	
		No	
	Why?		

APPENDIX B

LIST OF SHEARING SHEDS AND ASSOCIATIONS PER SHEARING SHED

Table B.1: List of shearing sheds and associations per shearing shed

Location	Shearing sheds	Association/cooperative
Butha-Buthe District		
1.	Libono	Libono WGA, Mataoaing FA and MG
2.	Qholaqhoe	Qholaghoe WGA and MG
3.	Butha-Buthe	Likhutlong WGA and MG, Butha-Buthe Co-op
4.	Tsime	Tsime WGA and MG
5.	Moteng	Moteng WGA, Muela FA
6.	Kao	Kao MG, Motete WGA
7.	Rampai	Rampai WGA, MG and FA
Leribe District		
8.	Hlotse	Hlotse MG
9.	Peka	Peka MG
10.	Pitseng	Pitseng MG
11.	Koasa	Koasa MG
12.	Pelaneng	Pelaneng WGA and MG
13.	Lejoemotho	Lejoemotho WGA and MG
14.	Thibeli	Thibeli WGA and MG
15.	Khafung	Khafung MG
16.	Pelatsoeu	Pelatsoeu MG
Berea District		
17.	Teyateyaneng	Teyateyaneng WGA and MG
18.	Moletsane	Moletsane WGA and MG
19.	Mateka	Mateka MG
20.	Nokong	Nokong WGA and MG
21.	Bela- Bela	Bela-Bela MG
22.	Maqhaka	Maqhaka WGA and MG
23.	Sebedia	Sebedia WGA
Thaba-Tseka District		
24.	Chaena	Chaena WGA and MG
25.	Mantsonyane	Mantsonyane WGA and MG
26.	Letuka	Letuka WGA and MG
27.	Thaba-Tseka	Thaba-Tseka WGA and MG, Lesobeng WGA and MG
28.	Sehonghong	Sehonghong WGA and MG
29.	Mohlanepeng	Mohlanepeng WGA and MG
Maseru District		
30.	Qoaling	Qoaling WGA and MG
31.	Machache	Machache WGA and MG
32.	Bushman's Nek	Bushman's Nek WGA and MG, Sosa WGA
33.	Likalaneng	Likalaneng WGA and MG
34.	Marakabei	Marakabei WGA and MG
35.	Qeme	Qeme WGA and MG

Location	Shearing sheds	Association/cooperative
36.	Mokema	Mokema WGA and MG
37.	Simione	Simione WGA and MG
38.	Masite	Masite WGA and MG
39.	Matsieng	Matsieng WGA and MG
40.	Tlali	Tlali WGA and MG
41.	Ramabanta	Ramabanta WGA and MG
42.	Semongkong	Semongkong WGA and MG
Mafeteng District		
43.	Mafeteng	Duma WGA and MG, Mafeteng United Co-op
44.	Hermone	Hermone WGA and MG
45.	Tsakholo	Tsakholo WGA and MG
46.	Kolo	Kolo WGA and MG
47.	Makhakhe	Makhakhe WGA and MG
48.	Thabana-Morena	Thabana- Morena WGA and MG
49.	Ribaneng	Masemouse MG
50.	Qaba	Matelile WGA and MG
51.	Mathebe	Mathebe WGA and MG and United Co-op Soc.
Mohale's Hoek District		
52.	Mohale's Hoek	Dicka WGA and MG, Qaqatu WGA and MG, Motlejoeng MG
53.	Mpharane	Mpharane WGA, Qobong WGA and MG, Phala MG, Ntjepeleng WGA, Makoana MG
54.	Mekaling	Mekaling MG, Maphutseng MG
55.	Tsoloane	Tsoloane Co-op Soc., Taung WGA and MG
56.	Phamong	Phamong WGA and MG
57.	Lithipeng	Mabilikoe WGA and MG
58.	Ketane	Ketane WGA and MG
Quthing District		
59	Moyeni	Moyeni WGA and MG
60.	Dilli-Dilli	Dilli-Dilli WGA and MG
61.	Tosing	Tosing MG
62.	Koali	Koali WGA and MG
63.	Mapheelle	Mapheelle MG
64.	Peete	Makoae MG, Mphaki MG
65.	Ntsie	Ntsie MG
66.	Tsepo	Tsepo MG
67.	Lebelonyane	Lebelonyane MG
68.	Quthing Sheep Stud	(Stud animals only)
Qacha's Nek District		
69.	Qacha's Nek	WGA and MG
70.	Ramatseliso	Ramatseliso WGA and MG
71.	Sehlabathebe	Sehlabathebe WGA
72.	Sehlabathebe (LCRD Project)	Sehlabathebe Grazing Association

Location	Shearing sheds	Association/cooperative
73.	Sehapa	Sehapa WGA
74.	Tsoelike	Tsoelike MG
75.	Qabane	Qabane WGA and MG
76.	Sekakes	Sekakes MG
77.	Mapote	Mapote WGA and MG
78.	Hloahloeng	Hloahloeng WGA and MG
Mokhotlong District		
79.	Thabang	Mokhotlong Co-op, Thabang WGA and MG
80.	Semenanyana	Semenanyana WGA and MG, Bobete WGA and MG
81.	Malefiloane	Mateanong WGA and MG
82.	Sani Top	Sani WGA and MG
83.	Masoleng	Mapholaneng WGA and MG
84.	Masenkeng	Maxhapung MG, Libibing WGA
85.	Tlokoeng	Matlekeng WGA and MG
86.	Linakaneng	Bobatsi WGA and MG
87.	Nts'upe	Meno WGA and MG
88.	Bafali	Moremoholo WGA and MG
89.	Mokhotlong Sheep Stud	(Stud animals only)

APPENDIX C

SUMMARY OF CORRECTIVE STRATEGIES AND ACTION PLANS TO IMPROVE EFFICIENCY

Table C.1: Strategies to address the poor feeding status

Objective	Description of possible solutions	Actions
Rangeland Management	De-stocking initiatives	Introduce grazing levies
		Culling of low producing animals
		Exchange low producing animals with high producing animals
	Strengthening, support and expansion of RMA's	Use RMA's as an extension communication channel. Develop study groups at RMA level.
		Give RMA's more authority by means of representative ness in an institutionalised structure.
		Train RMA leadership (train the trainer) regarding the importance of rangeland management.
		Implement previous recommendations regarding RMA's
	Control of veldt fires	Gov. must supply fire control equipment for each village
		Introduce school educational programs stressing the damaging effects of veldt fires and control mechanisms
		Include programs that address veldt fires in extension programs to both stock owners and herd boys
		Prepare fire control paths in a coordinated way before winter, especially around villages
		Communities at village level must organise veldt fire committees. It should be within the RMA structure.
Supplementary feeding	Produce own fodder	Produce own fodder at fallow land
		Negotiate equity sharing with crop farmers to obtain fodder
	Purchasing of supplementary fodder	Supplementary fodder, salts and licks must be available for purchasing – Development of own cooperative system within shearing shed structure to obtain economy of scale for purposes of purchasing, transport etc.
		Development of village or cooperative banking system.

Objective	Description of possible solutions	Actions
Extension and Training	Development of scientifically founded extension programmes	Development of courses for farmers in: Veldt management, Veldt types, grass types, nutritional value of different grasses and plants, feeding requirements, supplementary feeding, health control, stock management, financial management
	Identify target groups	Herd boys and stock owners
	Communication channels	Extension officers, field personnel, radio, shearing sheds associations acted as study groups
	Institutional arrangements	Development of study groups within associations
		Regular study group meetings - Monthly
	Development of motivated and trained extension personnel	Introducing better incentives for personnel staying in rural areas, i.e. bonuses, housing, transport, etc.
		Assist extension officers with development of programs instead of *ad hoc* extension.
		Ensure that extension officers and field personnel are well trained.

Table C.2: Strategies to maintain quality and quantity in national small stock numbers.

Objective	Description of possible solutions	Actions
Control stock theft	Institutional arrangements	Develop an institutional structure that includes all role players at all levels (See Figure 4.6)
		Active support to anti-stock theft structure.
	Governmental arrangements	Implementation of program of identification marks for all livestock.
	Judicial responsibilities	Enforce heavy penalties against stock theft
	Community involvement	Develop better relations between police and community and cross-border role players.
		Develop informal group structures to protect each other's property
		Participate in proposed structures
		Supply information to police
		Police must develop and execute a rewarding system for preventative information or information leading to the arrest of perpetrators
Higher reproduction rates	Better management of ewes	Enable herd boys and stock owners to keep record of ewes with poor reproduction record
		Cull ewes with low reproduction rates
		Give special attention to ewes with twins
		Select for fertility
		Ensure supplementary feeding during lactation
		Make use of AI if possible
		Keep hamels and kapaters away from ewes during mating season
	Good management of rams	Test all RSA and other purchased rams for fertility at purchasing and one year later. Negotiate replacement from breeders if rams became infertile
		Test all rams for fertility before mating season
		Ensure good feeding especially before and during the mating season
		Use the hands on management capacity of herd boys to record and remove ewes from rams already concepted
		Maintain ram to ewe ratio. As a guideline, do not mate more than 30 ewes per ram

Objective	Description of possible solutions	Actions
Lower mortality rates	Better feeding	Supply ewes with supplementary feeding during gestation period
		Supply energy licks during winter
		Supply ewes with supplementary feeding during lactation period
	Animal protection	Ensure that lambs and kids are supplied with protection against harsh weather conditions
	Health control	Introduce vaccination programs for lambs/kids
		Ensure that whole flock partake in vaccination and dipping program
	Predator control	Control of dogs around villages
		Use kraals to protect animals at night

Table C.3: Strategies for the improvement of genetic material

Objective	Description of possible solutions	Actions
Maintain and improve quality of genetic material	Purchase good quality rams	Purchase adapted rams from veld clubs and recognized breeders in South Africa
		Make use of different breeders as a supply source of quality rams and ewes
		Cause against the purchase of kraal fed rams
		Purchase according specific needs of farmers within Lesotho
		Select strongly against pigment and kemp when purchasing
		Assist farmers with a loan scheme to purchase better quality rams. The revolving fund previously used must be re-instated and managed in a better way to ensure sustainability of the fund
		Develop a village banking system to assist farmers with credit
		Make use of independent selectors when selecting rams for purchasing
		Participate in the ram breeding scheme on offer by the NWGA
	Domestic ram breeding	Motivate producers to participate at shows and farmers days
		Compete against each other at farmers days
		Impose strict selection criteria with both rams and ewes
		Castrate all male lambs and kids not earmarked for breeding purposes
	Ewes	Select ewes strictly for fertility, wool/mohair quality and configuration
	Training of farmers	Train extension staff to recognize good and poor quality breeding material and to assist farmers in the selection process
		Train farmers to select between good and poor quality
		Make use of expertise provided by South African breeders and farmers, NGO's and others
		Use farmers days and shows as platforms to reward farmers with good performance, thereby encourage others to follow the example

Table C.4: Strategies and actions needed for health control

Objective	Description of possible solutions	Actions
Improve health of the national small stock	Introduction of health control programs	Enforce participation of all small stock owners in dipping program
		Combine dipping program with medicinal applications for the control of sheep scab
		Continue and improve on the national health control program
		Motivate and allow other role players to participate in the health control program
		Make use of mobile health control units to reach small stock in very rural areas
		Record and keep track of control measures per farmer
		Motivate and compensate farmers with good participation in programs
	Availability of medicines	Ensure that necessary medicines are available at all towns
		Ensure that medicines used are still within expiry dates
		Ensure that medicines are stored and transported according specifications
		Development of the proposed micro-cooperative structure could empower farmers to buy in bulk and keep medicines available when needed
	Training of farmers and herd boys	Train farmers and herd boys to timely identify health problems
		Train farmers and herd boys to apply appropriate treatments
		Compensate farmers with healthy stock

Table C.5: Strategies to improve the shearing shed structure

Objective	Description of possible solutions	Actions
Privatisation	Development of micro-cooperative structure with shearing sheds as basis	Communicate idea with farmers
		Supply training on principles of micro-cooperative structures
		Discuss alternatives with farmers
		Assist farmers to identify own leadership
		Phase process in. Start with associations with capable leadership and allow them to gradually take ownership of shearing sheds and processes
		Develop a national structure
Reduce delays in payment	Computerize administration process	Use and refine available software packages developed by the brokers
		Purchase necessary hardware
		Train administrative personnel
		Train shearing shed personnel
		Administrate producers according producer numbers
		Ensure that computerised system is phased in from next season
	Electronic payments	Assist farmers to open personal bank accounts. Communicate with banks and obtain their support
		Develop a decentralised village banking system
	Catalogue clips on a more regular basis for sale on auction	Ensure prompt transportation of clips as soon as a load is full
		Allow brokers to catalogue clip on arrival or as soon as possible
Improve cost efficiency of shearing sheds	Efficient utilization of shearing shed personnel	Appoint contract workers for administrative purposes. The same as shearers and classers
Reduce transaction costs	Transport	Adjust transport system. Transport directly via the shortest and cost effective routes to brokers' bulk stores

Table C.6: Strategies with regards to the alternative marketing structures

Objective	Description of possible solutions	Actions
Liberate wool and mohair trade within the country	Liberate licensing of traders	Allow all buyers to purchase and trade in wool without any restrictions
		Motivate local business people to invest in this section
		Wool buyers must obtain deed of ownership from stock owners and wool sellers
		Increase control of wool traffic at border posts
		Institute grazing levy as the primary source of income for the dipping fee
		Assist other role players to participate in the shearing and marketing process
		Develop standards and plans for mobile shearing sheds and implement the system
		Copy systems already applied by others such as Teba Developers
Making the alternative system more accessible to farmers	Encourage the development of mobile shearing sheds	Establish linkages between mobile shearing sheds and brokers. Non-shearing shed farmers will then also gain direct access to the auction system and thereby receive better prices

Table C.7: Government support strategies

Objective	Description of possible solutions	Actions
Improve production outputs of wool and mutton	Improve extension and research support to the wool industry	Increase capacity of extension officers by: ◦ Allocate sufficient funds to the extension services • Support extension workers with infrastructure such as vehicles or motor cycles in order to visit groups in remote areas • Supply the necessary incentives for extension officers staying in and working in • Coordinate and obtain support from NGO's to assist with training and direct support to producers • Tailor-made training of extension officers *re* production problems highlighted in this study with an emphasis on rangeland management • Support the industry with applied research • Create the necessary environment for NGO,s and South African producers to introduce training /mentoring programs • Implement the sheep improvement scheme of the NWGA in South Africa
Rationalisation of LPMS	Transfer of administration of shearing sheds to producers	Producers should take ownership of administration within shearing shed. Should appoint capable people on contract basis
Increase administrative efficiency	Computerise administration system	See table C.5
Personnel issues	Personnel rationalisation	Development of a rationalised personnel plan
		Reduce personnel according to plan
		Select best personnel
		Re-train new personnel
		Appoint individuals on contract basis if services are required only for few months per year
		Field personnel should form part of Dept. Field Services
		Personnel at shearing sheds should be phased out in conjunction with the privatisation process. Producers should make use of contract workers to perform administrative duties

Objective	Description of possible solutions	Actions
Focus on strategic level	Develop specific objectives to focus on international marketing and linkages with international institutions	Objectives should include: • Marketing of national clips • Development of good international relations • Development of an efficient information system • Improve border control • Improve liaison with other government departments • Support the industry with strategic marketing issues • Supply necessary information and training to extension officers with market requirements, trends, forecasts etc.
Supply timely and correct information to industry	Developing of a national information system	Link with other regional information networks in South Africa
		Continue with information transfer from BKB, CMW, Cape Wools and Mohair SA
		Ensure open channels of communication with extension personnel
		Make more use of radio to communicate information on a daily basis
		Strengthen personnel in the information section