Towards Rural Innovation Extension Delivery in Lesotho: The Perceived Benefit of a Multi-Stakeholders Intervention Approach

By

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Declaration

I, Thato Molomo declare that the dissertation, which I hereby submit for the Degree of Master of Science in Agricultural Extension and Rural Development at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

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ABSTRACT

Rural Agricultural Extension System in Lesotho depends on how successful extension knowledge is assembled from multiple actors and applied. Issues are wide ranging, from professional management and technical capacity constraints to the use of multiple, often overlapping and competing approaches by various role players, to mention just a few. First, the study identified multiple actors in rural agricultural extension. Second, it assessed the extent of multi-stakeholder coordination and the approaches used in rural extension. Third, it presented a comparison between best innovative models as identified in the literature and the practices in Lesotho. Fourth, it developed an innovative intervention model for knowledge transfer in consultation with the users of extension service in the two rural settlements. Using a mixed-research method conducted in two rural settlements from Ha Lejone in the Highlands and 'Muela in the Eastern Foothills of Lesotho to study the problem of coordination among actors, anecdotal evidences suggested that the patterns of interaction are not as effective and efficient as they potentially could be. The results show a mismatch of activities between service providers and farmers in terms of inputs provided and inputs required. Poor inter-ministerial and institutional coordination cultures are the major

elements preventing more effective interaction among actors. Introducing a multi-stakeholder intervention approach maps out roles and relationships within the extension knowledge systems by incorporating practices that are already known with exotic ones would give a fresh impetus to the reform of public sector agricultural extension in Lesotho. Policy recommendations for better use of innovation knowledge systems and approaches in the delivery of extension services, concludes the thesis.

Keywords: Rural Extension, Rural Innovations, Multi-stakeholder Interventions, Integration, Extension Service Delivery, Intervention Models.

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CHAPTER 1

INTRODUCTION

1.1 General Information

Adopting a multi-stakeholder intervention approach is a rising phenomenon in rural innovation extension service delivery. The approach seeks to synchronize actors' efforts to better improve rural extension service delivery through involvement of farmers. The approach is described as a platform where stakeholders' interaction, coordination and collective action are geared towards identifying opportunities for innovations (World Bank, 2011:11). In contrast to the linear relationships between scientific research, technology development and product innovations, the public and private stakeholders may be jointly involved in these tasks and synergistically work as a system (Pant & Odame, 2006:61).Traditionally, extension services are associated with the helping roles to assist farming communities to achieve food security. Several extension approaches have been adopted in the recent decades which did not necessarily serve farming interests and purposes of farm families and communities (Hall et al., 2002:156; van der Pol, 2005:1).

The situation calls for a fresh look at the role of traditional agricultural extension, policies, strategies and resources to ensure that actors are systematically working as a collective team. The major contribution of multi-stakeholder intervention is to help farming communities adopt inclusive problem solving approaches and to move away from single-handed efforts to partnerships. It encourages the engagement of various actors in extension with

diverse capabilities and potential to develop rural agricultural extension services in several ways including shared knowledge about approaches, methods, and culture (Lundy & Gottret, 2005:5). Interaction of identified stakeholders in a system needs to be designed to harness and focus energies and make possible coordination of their efforts (Swanepoel & De Beer, 2006:19; Van den Ban & Hawkins, 1999:233).

Previous research suggests that no single organization, even with adequate resources, can solve today's farming problems. Several authors (Düvel, 2005b:10; van Veenhuizen *et al.*,2007:4; Qamar,2005:19; Okorley *et al.*,2010:1) in the literature, advocate for a multi-stakeholder intervention approach in most developing countries to operate jointly for sustainable extension service delivery. Nonetheless, these authors have raised a concern that a multi-sector approach presents challenges on the relationship between individuals and multiple actors which should be addressed by policies. Relationships between actors involved in rural extension service delivery matters and need to be supported with policy. Policy should also promote innovation and recognise coordination between producers and users of knowledge and enhance a type of relationship that is conducive for interactive learning and knowledge sharing.

1.2 Problem statement

Developing rural communities in Lesotho is a dynamic process that is rife with myriad challenges in the issues of food security, poverty alleviation, malnutrition and unemployment, to name but a few examples. As a result, public, private and non-governmental civil society organisations often prioritise support programs for rural

development through their agricultural development practitioners, researchers and community development workers. Simultaneously, rural farm families and communities themselves are often engaged in finding solutions for their own problems through organized structures which are intended to provide guidance and support for community members to achieve their intended goals. However, challenges accrue in the manner in which these support services are coordinated amongst multiple stakeholders.

The most common problem is the interest of research in the development of extension interventions focusing largely on transfer of technologies without taking into account the felt needs of the beneficiaries (Clark, 2002:335; Sumberg *et al*., 2003:739-740). Secondly, extension messages that are delivered tend to be irrelevant to the needs of the farming community. Thirdly, the multiple service providers often target the same recipients of services with minimal communication between and amongst themselves. Finally, uncoordinated agricultural extension support services not only lead to duplication of services but also confuse farmers (Sumberg *et al*., 2003:740).

In bridging the gap of lack of a close working relationship amongst actors, Ngomane (2006:208) highlighted that the use of multiple actors, such as NGOs, and related community based organizations, to provide extension support to isolated farmers remains an area that needs to be promoted and incorporated in the contemporary sector development strategies. Also Byerlee and Echeverria (2002:159) have observed that innovation takes place chiefly as a result of interactive relationship between those engaged in knowledge creation (research) and those engaged in knowledge application (economic production). Leeuwis (2010:2) added that

innovation system is based on an integration of ideas and insights from not only scientists, but also from users, intermediaries and other societal agents. Innovative extension systems bring about a change from transfer of technologies by researchers to beneficiaries by taking into consideration the felt needs and the knowledge of the beneficiaries.

1.3 Thesis objectives

The following specific objectives will guide the study:

- To identify all actors involved in rural agricultural extension development and define their scope of service in the selected study sites.

- To determine the extent of multi-stakeholder coordination and the approaches used in rural extension.

- To compare and contrast best innovative models of extension coordination as identified in the literature against prevailing practices in Lesotho.

- To develop the best fit model for coordinated and innovative extension interventions.

- To make policy recommendations on innovation rural extension delivery in Lesotho.

1.4 Thesis contributions

The main reason for undertaking this study is to contribute to the academic literature on social learning and development processes of rural innovation extension delivery in achieving improved rural agricultural development with specific reference to multi-stakeholder intervention approach. In proposing rural innovation

extension delivery, this study attempts to fill the gap in literature on the learning and development of a multi-stakeholder platform and subsequently contribute to filling the research vacuum.

Unlike in previously practised coordination which hinged on personal relationship, the proposed study will contribute by developing a suitable model which will stimulate use of team effort by multiple actors in Lesotho. Bembridge (1991:199) has specifically argued that success in programming depends on the interrelationship between the extension services and rural communities so that they become one system to achieve a common purpose. He further spelled out that to achieve effective coordination, it is necessary to identify and analyse the collaborative needs of specific target groups.

1.5 Thesis outline

Chapter 2 is a review of literature. It outlines the key stakeholders in extension service delivery and describes the historical development and evolution of agricultural extension globally. It highlights the major models and approaches starting with a linear traditional model of technology transfer that dominated the extension service delivery in the twentieth century and evolved into a range of different approaches, for example, innovations and coordination in agricultural extension delivery.

Chapter 3 describes the methods of collecting primary and secondary data. Primary data was collected from farmers within the two areas and from different organisations providing extension services. It outlines the study areas where the research was conducted and the criteria used for selection of the locations. It

outlines the research design including sampling, data collection procedure and data processing and the statistical analysis. Farmers sampling was randomised and stratified while convenience sampling was used for the agricultural extension organisations. These data will be essential in the following chapters to strengthen extension service delivery on a long term basis.

Chapter 4 presents socio-economic characteristics of farmers and service providers such as age; gender, educational background and economic activities which are assumed to have an influence on the adoption of agricultural innovative systems.

Chapter 5 presents research results and discussions. It starts by presenting stakeholders as identified in the study areas and defining their scope in agricultural extension services. It outlines the extent of coordination among the identified actors. The chapter outlines the comparison between the best global innovation models and the practice in Lesotho, and puts forward a description of an innovation model that the study sets out to propose. It concludes by making policy recommendations.

Chapter 6 concludes the thesis with a summary of the major findings and presentation of recommendations for future research opportunities identified during the completion of this study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature based on the five objectives of the study. It begins by identifying organisations that provide different types of extension services to different groups of farmers and defining their scope and role in agricultural extension service delivery. Identification of the key stakeholders is important to the success of agricultural innovation systems as it provides information about the organisations that have interest in agricultural extension service delivery. This information can be used to provide a guide in participatory processes and in the development of plans and support for a policy reform (Schmeer, 1999:2). The second part determines the extent of multi-stakeholder coordination and the approaches used in extension services. There is a need for enhancing interaction, networking, peer exchange, institutional strengthening, and experience sharing in relation to rural extension system (Christoplos, 2010:19). The third part compares and contrasts best innovative models of extension globally with the practices in Lesotho. Traditional linear models of technology transfer need to be replaced by acknowledgment of a more complex and dynamic set of relationships and innovations systems (Christoplos, 2010:57).

The fourth part develops the best fit model for innovative extension intervention approach. The model intends to serve two main purposes. First, to assist in the design and reform of agricultural extension service delivery by defining the system in which policy

decisions can be identified and made. Second, the model can provide a common analytic framework thereby accommodating multi-disciplinary approaches and facilitating comparative findings across different projects (Birner *et al.*, 2009:343). Finally, a policy recommendation is made to enable agricultural innovative systems in Lesotho. A policy which advances interaction of small–scale farmers with extension organisations in terms of production, trade and income was reviewed in this regard.

2.2 Major Stakeholders in extension service delivery

Stakeholders are found in any given community. An identification of stakeholders could be of assistance to promote participation of role players in agricultural development. A stakeholder, as described by Swanepoel & De Beer (2006:17) refers to an individual or organization having a stake or interest in an activity or project. Agricultural extension innovation provides for participation of all stakeholders in technology generation, technology experimentation, technology diffusion and technology learning (Gera *et al.*, 2010:13). In rural agricultural development a stakeholder is viewed as having a stake in rural agricultural extension delivery. Pant & Odame (2006:65) developed a classification of stakeholders as follows: public sector, private sector, civil society and community group in innovation systems.

2.2.1 Public sector

Part of the functions of the public sector in agricultural innovations, especially, in the developing world includes provision of extension services to farming communities and capacity building of extension service providers and researchers. These are achieved through the

development of policy guidelines, market information and community outreach for collective action. In Lesotho, public sector stakeholders consist of government departments such as the Department of Field Services (DFS), Department of Agricultural Research (DAR) dealing with issues such as rural development and agriculture (Ministry of Agriculture Cooperatives and Land Reclamation, 2000:22). Parastatals are included in this sector as they also provide specialised extension services to selected projects prioritised by government. Pant & Odame (2006:63) explain that in most low-income countries, the public sector works in partnership with non-governmental organisations for both conventional and non-conventional agriculture. The same authors further assert that through these partnerships smallholder farmers are better recognised as emerging or potential entrepreneurs.

2.2.2 Private sector

This sector is composed of active groups in commerce and industry, including factories manufacturing consumer goods (Swanepoel & De Beer, 2006:18). According to Biggs (1990:1486), the primary objective of the private sector is to maximise profit. In the pursuit of such profits, private sector firms develop and promote the use of effective information systems and products that respond to farmers needs(Swanson & Samy,2002;5). The private sector has an important influence on technological change in developing countries and can influence the government to meet corporate interests (Biggs, 1990:1486; Pant & Odame, 2006:64). Some private firms provide extension services targeting small and large scale farmers in partnership with the public sector (Swanson & Samy, 2002:5). Despite these potential benefits Arokoyo *et al.*

(2005:8), argue that participation of private sector in developing countries is still low.

2.2.3 Non-governmental civil society organisations

The concept of Civil Society Organisations (CSOs) is broad and inclusive of non-governmental organisations (NGOs), charities, trusts, foundations, advocacy groups, and national and international non-state associations (Hutter & Mahony, 2004:1). The study focuses on the NGOs as the important institutional players in rural development over the past two decades (Swanson & Samy 2002:9). According to Farrington & Biggs (1990:480), NGOs work with the local communities to identify problems and to organise local efforts to solve them, while building capacity and providing developmental services. Swanepoel & De Beer (2006:18) noted that NGOs came into existence to address specific problems such as farming methods to rural farmers at grass-roots. An example of such NGO in Lesotho would be World Vision International. NGOs and government institutions have worked together innovatively and created new management of extension system through mobilisation of resources, communities and introducing and up–scaling of technologies (Christoplos, 2010:41).

2.2.4 Community Sector

This sector consists of organisations founded and run by individuals or groups within the communities, including farmer organisations (Swanepoel & De Beer, 2006:19). Van den Ban & Hawkins (1996:234) perceive farmers as recipients of new information. Pant & Odame (2006:65-66); Sumberg *et al.* (2003:740) render farmers

as technology adopters or people who have problems that are fed back to extension advisers and researchers. But Reece *et al.* (2003:411) have different view altogether in that farmers and their organisations such as clubs, women, youth, cooperative unions and associations are viewed as capable and active part of technology development. With the right partnership, farmers can tackle their own problems using scientific principles. For instance, van Mele *et.al* (2005:91) asserted that farmers have no difficulty in ranking soil fertility using their indigenous knowledge which later, when backed-up by scientific tests, show similar results. Furthermore, farm families are more experienced in agricultural activities and have a better knowledge of the local environment (Dalrymple, 2004:4). This is the innovativeness that is required in Lesotho's rural extension systems.

A summary of the stakeholders involved in multi-stakeholder interventions and their characteristics are presented in Table 1:

Table 1: Structural typology of actors in innovations systems

Item	Typology	Characteristics of stakeholders
1	Community sector	Farmer and farm families are more experienced in agricultural activities and have a better knowledge of the local environment (Dalrymple, 2004:4). Reece *at al.* (2003:411) view farmers and their organisations such as clubs, women, youth, cooperative unions and associations as capable and active part of technology development.
2	Public sector	Consists of government ministries with departments. Their focus is mainly on Transfer of Technology. Pant & Odame (2006:65-66) argue that public sector is inefficient due to hierarchical and bureaucratic system.
3	Civil society	Includes non-governmental organizations in service of the public good. In the view of Farrington & Biggs (1990:480), NGOs work with local communities to identify problems and to organise local efforts to solve them, while building capacity and providing developmental services. Swanepoel & De Beer (2006:18) added that civil society aim to address specific problem us as poor farming methods. These organisations are also open to and facilitate learning from farmers.
4	Private sector	According to Biggs (1990:1486), the primary objective of the private sector is to maximise profit. In the pursuit of such profits, private sector firms develop and promote use of effective information systems and products that respond to farmers needs.(Swanson & Samy,2002;5) . The private sector consist of active groups in commerce and industry (Swanepoel & de beer, 2006; 18).

Source: Author's compilation

According to Gera *et al.*(2010:13.), it may be concluded from the preceding section that in identifying multiple stakeholders and the development and/or adaptation of technology, the diffusion of such technology and learning is important. Similarly, Biggs (1990:1484) added that innovations to address and solve problems come from

multiple sources, including farmers. However, with the recognition of such multiple stakeholders in development intervention there are possibilities of overlaps and duplications of efforts as well as creation of community conflicts. Some stakeholders might prefer to work in isolation for territorial monopoly. The following section examines ways to avoid such overlaps and duplication across multiple organizations.

2.3 Coordination and extension approaches in rural extension delivery

2.3.1 Coordination and partnership

This section provides an overview of the importance of coordination and pluralistic extension system among stakeholders identified in the previous sections. Consolidating stakeholder's efforts, approaches and activities in agricultural extension could improve the quality of extension service delivery. Different authors use different terminologies van Veenhuizen *et al.* (2007:4) refer to a multi-stakeholder intervention approach as an integrated planning and management process for improving rural innovation extension service delivery. Qamar (2005:19) refers to a multi-disciplinary, integrated and holistic approach to development. Okorley *et al.* (2010:1) refer to decentralized pluralistic extension, interaction between organisations and different sectors which is an important factor that can contribute to the success of rural extension system and service delivery.

According to Qamar (2005:19), multi-sector development is more meaningful than individual sector development. Steins and Edwards (in Warner, 2005:3) described the concept as a multi

stakeholder platform comprising different stakeholders who perceive the same resource management problem and come together to agree on action strategies for solving the problem. Thomas *et al*. (2008:81) added that collaborative participation cannot only be a condition that is necessary for crafting sustainable solutions to messy problems, but can also be an added advantage in building institutions and networking. Lundy & Gottret (2005:5) underlined learning alliance approach to promote synergy among multiple actors by providing a vehicle for collaboration in contrast to traditional linear approach.

Lundy & Gottret (2005:13) have developed a comparison between traditional linear innovation processes and learning alliance approach. According to the same authors learning alliances incorporate knowledge and experiences from a range of sources as opposed to linear models. The author will use this comparison to contrast with the practices in Lesotho. Table 2 provides the detail of the comparison.

Table 2: Comparison between linear innovation model and learning alliance

Priority for	Linear innovation model	Learning alliances approach
Knowledge generation	Knowledge generation occurs without the participation of key stakeholders	Key stakeholders participate directly in setting the research agenda as well as specific action-research activities that generate or improve knowledge.
Innovation	Users have limited access to experts to answer implementation questions in a timely fashion	Provision of backstopping and coaching by researchers and other experienced alliance partners through staggered training sessions, programmed field visits and continual exchanges using ICTs.
Knowledge generation/ Innovation	Knowledge generation and pilot innovation occurs far from field realities.	Knowledge generation and pilot innovations occurs in rural communities with the participation of researcher's development agents, enterprises and community members.
Knowledge generation	Limited interaction among knowledge sources and users to costly transfer processes and limited coverage	Links between learning alliance participants promoted to develop processes of horizontal learning and adoption Strategies. These strategies foster knowledge diffusion and improve coverage.
Knowledge generation	Knowledge generators have limited opportunities to follow-up on user innovation and adaptation to understand why change occurs or not	Knowledge generators both researchers and others are directly involved in user innovation and adaptation and can document insights on how and why change occurs or not in specific cases and conduct comparative analysis among different sites and contexts.

Source: Adopted from: Lundy & Gottret (2005:13).

When comparing between linear innovation model and learning alliance approach we learn an important advance that learning alliances approach represents in multi-stakeholders interaction.

There is still a need for good facilitation of the alliances and the strategy for information dissemination of the lessons as they are learned.

2.3.2. Extension Approaches and systems

Previously used extension approaches (Traditional, Farming System Research and Farmer Participation Research) have advanced for over a decade, from a single public sector approach to a multi-sector approach to promote increased and sustainable agricultural production (Okorley *et al*., 2010:4). The point that Reece & Sumberg (2003:413) made about the traditional approach to agricultural research is that it is technology-driven, centralised and top-down. The extension agents synthesize and simplify the messages before being presented to farmers who are to be passive recipients of knowledge. Biggs (1990:1483) concern is that the major emphasis in traditional extension systems is on the transfer of technology and knowledge from research to farmers. This has rendered farmers to be mere adopters of technology or people who have problems that are fed back to extension advisers and researchers. An existing gap lies with sidelining the interests of the farmers in the system.

According to van der Pol (2005:1)**,** applying a farming systems approach to farmers enhances support and development that would lead to better knowledge generation from indigenous farming system and would ensure that such innovations are better accepted by farmers. However, the challenge is still to identify a suitable method of innovation to extract knowledge from small scale farmers.

Farmer Participation Research was introduced over a time when it became apparent that farmers have a major contribution to make in the development of new technology. Lundy and Gottret (2005:2) refer to a multi-stakeholder intervention approach as a means to overcome limitations of the traditional extension approach and farming systems research for generation of knowledge and fostering of innovation processes. Participatory research aims to promote agricultural diversification, and integration of farmer's indigenous technical knowledge with the dynamics of the markets. Researchers show an increasingly successful use of participatory methods to identify innovations introduced by farmers (Farrington & Biggs, 1990:485). These facilitate learning from farmers and innovativeness in modifying methodology suitable to farmer's circumstances and objectives.

Despite the goodness of the above-mentioned farming systems they were however, implemented separately rather than building on the existing knowledge or integrating the existing approaches in rural extension services (Martin *et al.*, 2011; 4). The recent focus is rural innovations which take into account combination of different sources of knowledge. This means that interactive learning within localities, market chains and national innovation platforms are crucial (Christoplos, 2010:49). The following section compares and contrasts the innovation models globally with the current practice of extension in Lesotho.

2.4 Comparing global innovative models of extension with the practice in Lesotho

2.4.1 The concept of Innovation

An innovation can be defined as a network of organisations, enterprises and individuals focused on bringing new products, new processes and new forms of organisation into economic use, together with the institutions and policies that affect the system's behaviour and performance (World bank,2006:VI; Rajalahti *et al.*,2008:3). According to Hall (2005:615), an innovation system is about knowledge application rather than research. The point here is the application of the knowledge that stakeholders have acquired over time by changing from traditional extension service delivery to an innovative system. Biggs (1990:1481) developed two models which signifies and implies the shift in rural innovations and these are the central source of innovation and the multiple sources of innovation models.

2.4.2 A central source model

A central source of innovation is characterized by one-way transfer of new innovations from research and extension system to farmers (Biggs 1990:1481). Widely adaptable technology is generated and transferred to the national agricultural research system for adaptive research and finally to extension systems for transfer to farmers (Biggs, 1990:1482). This is the mode of technology transfer that Clark (2002:356) has labelled top-down. At the core of the model, there are International Agricultural Research Institutions linked to the public sector research institutes at national level which are known as National Agricultural Research Systems (NARS) and

National Agricultural Research Institutes (NARI) for adaptive research and finally to extension system for transfer to farmers (Hall *et al.*, 2001:785;Reece & Sumberg, 2003:413).

2.4.3 A multiple source model

In contrast, the multiple source model of innovation emphasizes that innovations come from multiple sources such as private, public, and institutional actors in the research system, as well as farmers, presenting a two-way flow of information (Biggs, 1990:1485). Also the multiple sources of innovation model was depicted as more dynamic, with multiple, interacting sources of knowledge generation and innovation, including the state funded system, universities, private sector development organisations and farmers (Sumberg *et al.*, 2003:740). Hall *et al.* (2001:786) pointed out that innovations are generated not only by organised science alone but also by a number of stakeholders, including farmers. The outputs of research could be adaptable to rural producers and match their own circumstances (Reece & Sumberg 2003:410).

2.4.4 The importance of innovation systems in agricultural extension service delivery

According to Rajalahti *et al.* (2008:4), approaches for investing in research systems and innovation capacity have evolved, and these major changes in the context of agricultural development heighten the need to re-examine how innovation occurs in the agricultural sector are as follows:

- Markets, not production, increasingly drive agricultural development.

- The production, trade, and consumption environment for agricultural and agricultural products is growing more dynamic and evolving in unpredictable ways.

- Knowledge, information, and technology are increasingly generated, diffused, and applied through the private sector.

- Exponential in information and communication technology (ICT) has transformed the ability to take advantage of knowledge development in other places or other purposes.

- The knowledge structure of the agricultural sector in many countries is changing markedly. Agricultural development increasingly takes place in a globalized setting (in contrast to a setting characterised predominantly by national and local influence and interests).

2.4.5 Approaches developed in support of agricultural innovation

As described by World Bank (2006: VI) the context of agricultural development has evolved, ideas of what constitutes 'research capacity' have evolved along with approaches for investing in the capacity to innovate as presented below:

- In the 1980s and beyond '*national agricultural research institute'* (NARI) concept focused development on strengthening research supply by providing infrastructure, capacity, management and policy support at national level.

- In the 1990s the '*agricultural knowledge and information system for rural development'* (AKIS/RD) concept recognised that research was not the only means of generating or gaining access to the knowledge. Though it still focused on the supply of research, AKIS/RD gave much more attention to the links between research,

education and extension and to identify farmers demand for new technology.

- Most recently attention has focused on the demand for research and technology and the development of '*innovation system*' because strengthened research system may increase the supply of new knowledge and technology, but they may not necessarily improve capacity for innovation throughout the agricultural sector.

The global preference for multi-disciplinary, integration and holistic approach to development is now acknowledged (Qamar, 2006:27). Similarly, Rajalahti *et al.* (2008:5) describe the expansion of approaches from investing on research systems to innovation capacity presented in Table 3.

Table 3: Expanding view on how to strengthen innovation capacity in agriculture

Approach	Scope	Focus	Actors
National Agricultural Research Institute(NARS)	Activity based	Technology generation and transfer	Research organisations and Universities
Agricultural Knowledge and Information Systems (AKIS)	Output based	Knowledge and technology dissemination	Research organisations, Universities, extension services and non-governmental organisations
National Agricultural Innovation System(NAIS)	Outcome based	Technological and institutional innovation	All economic actors that actively use or generate knowledge

Source: Adapted from (Rajalahti *et al.*, 2008:5)

2.4.6 National Agricultural Research Systems (NARS)

NARS emerged after National Agriculture Research Institute (NARI) framework. It includes the main institutions that contribute to the agricultural knowledge flow such as the National Agricultural Extension Systems, the National Agricultural Education and Training Systems and NARI (Rivera, 2006b:60). NARS remains one-way system of central source of technology generation and diffusion (Farrington & Biggs, 1990:490; Swanson & Samy, 2002:7).

2.4.7 Agricultural Knowledge and Information System for Rural Development (AKIS/RD)

The concept recognises the point that besides research there are other ways to generate or to get access to knowledge (Hall *et al.*, 2010:13). Agricultural Knowledge and Information System /Rural Development are major components of multiple source models. AKIS/RD stresses the need for strong linkages between and among agricultural research, extension and education institutions and organisations in the private and public sectors (Rivera, 2006b:59).

2.4.8 Agricultural Innovation System (AIS)

Agricultural Innovation System is a recent concept and emerging framework for advancing agricultural innovation systems. According to Rivera (2006b:60),what renders AIS distinct from the previous systems is its emphasis on strengthening innovations using the established development approaches such as value chain, market and supply chain development with emphasis on high-value products and export markets.

Lesotho's extension system has begun to explore use of these systems. The National Agricultural Extension System as illustrated in Figure 1, though representative of the current situation in Lesotho, is a product of personal communication between the author and several officials in the public sector.

Figure 1: Lesotho's National Agricultural Innovation Extension System
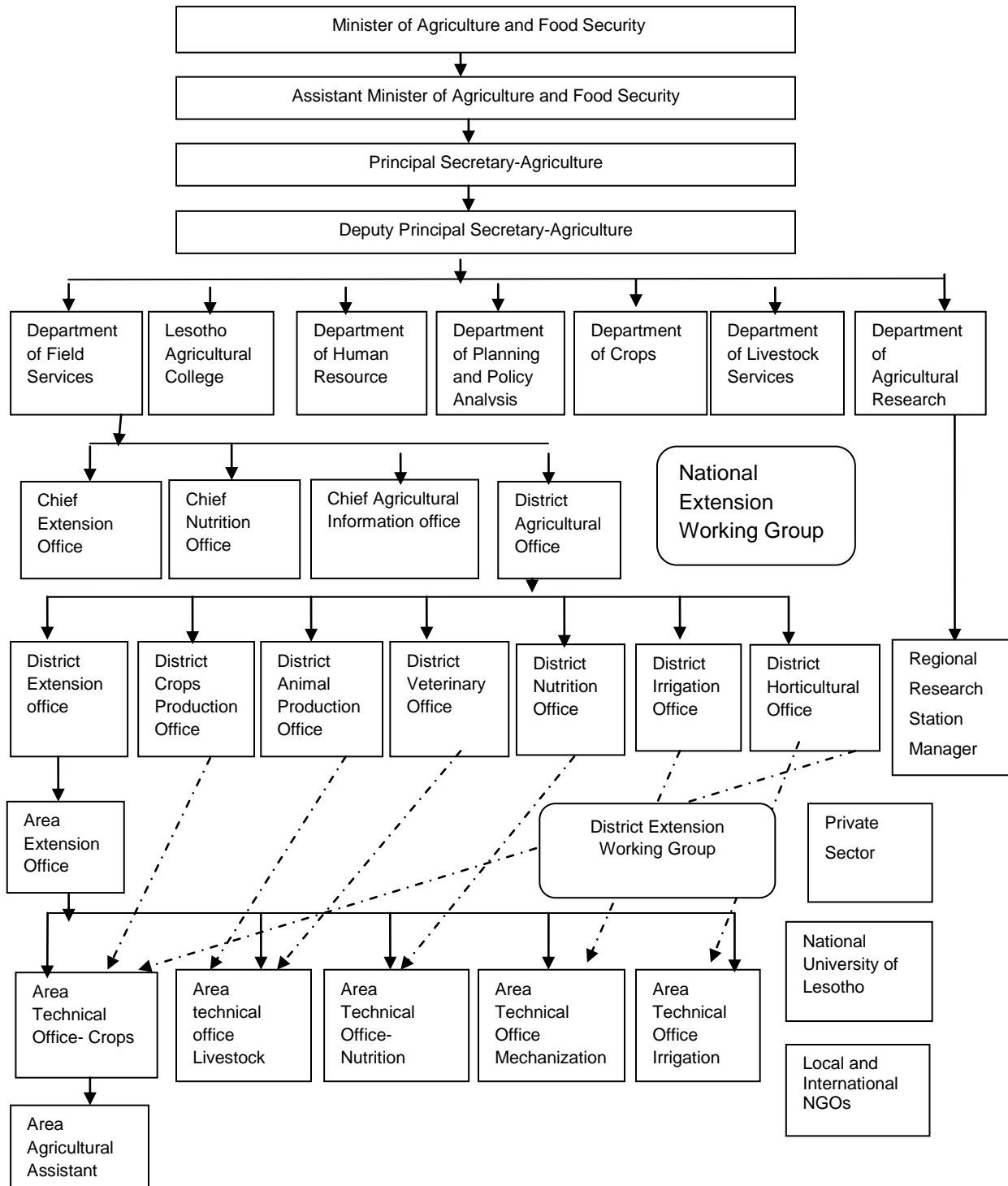
Figure 1 shows several organisations which provide extension support to the farmers in Lesotho. This includes the Ministry of Agriculture and Food Security (MAFS), which regulates and oversee the provision all agricultural activities by both public and private sectors in Lesotho. There are seven departments within the ministry namely, Department of Field Services (DFS), Lesotho Agricultural College (LAC), Department of Human Resource (DHR), Department of Planning and Policy Analysis (DPPA), Department of Crops(DOC), Department of Livestock Services(DLS) and Department of Agricultural Research(DAR). The major roles of the four technical departments (DDPA.DOC, DLS and DAR) are to influence policy and to backstop field staff (Subject Matter Specialists) technically (Tuoane, 2011: Personal Communication).

The DFS is mandated by the Ministry of Agriculture and Food Security to carry out extension services at National, District, Resource Center and Grassroots levels. The DAR carries out applied research throughout the levels. At the National Level, the DFS and the DAR are the focal points of extension systems and information dissemination. The two departments work independently but at district level, their services are coordinated by the District Agricultural Office (DAO) (Tuoane, 2011: Personal Communication).

The DAO takes charge of extension services within the district. This is achieved through Subject-Matter Specialists (SMS) such as District extension officer (DEO), District Crops Production Officer (DCPO), District Animal Production Officer (DAPO), District Veterinary Officer (DVO), District Irrigation Officer (DIO), District Nutrition Officer (DNO), and District Horticultural Officer (DHO). The assumption is that SMSs are specialists and are technically

competent to back-stop resource center area technical staff. Also at district level, the DAR has outreach stations (Tuoane, 2011 Personal Communication).

At Resource Center level, the Area Extension Officers (AEOs) are in charge of all Area Technical Officers (ATOs) – (Livestock, Nutrition, Crops, Mechanization and Irrigation) and the Extension Agricultural Assistants (E.A.As) who are generalists. The Area Technical Officers are linked to the Subject Matter Specialists by a dotted line. The E.A.As operate at sub-centers and their major role is to mobilize farmers in rural agricultural development and liaise with the technical officers (Tuoane, 2011: Personal Communication).

The illustration in Figure 2 is the documented national framework used in the systematic design and adaptation of extension interventions in Lesotho (Ministry of Agriculture Cooperatives and Land Reclamation, 2000:7).

Figure 2: Framework for National Extension Organisation in Lesotho
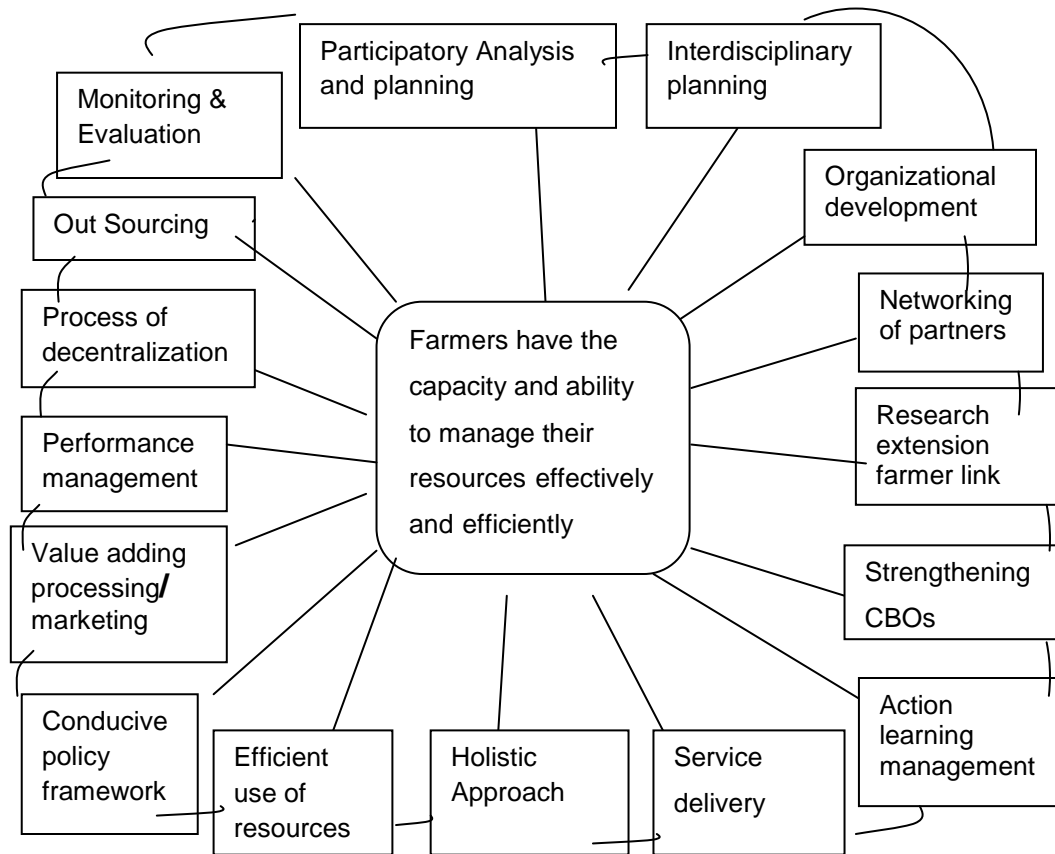
Source: (Ministry of Agriculture Cooperatives and Land Reclamation, 2000:7).

The main shortcoming in the framework as presented above is the lack of explicit roles and how to provide systemic support.

At district level, extension organization aims at integrating all activities emanating from both national and grassroots levels as illustrated in figure 3.

Figure 3: Framework for District Extension Organization in Lesotho
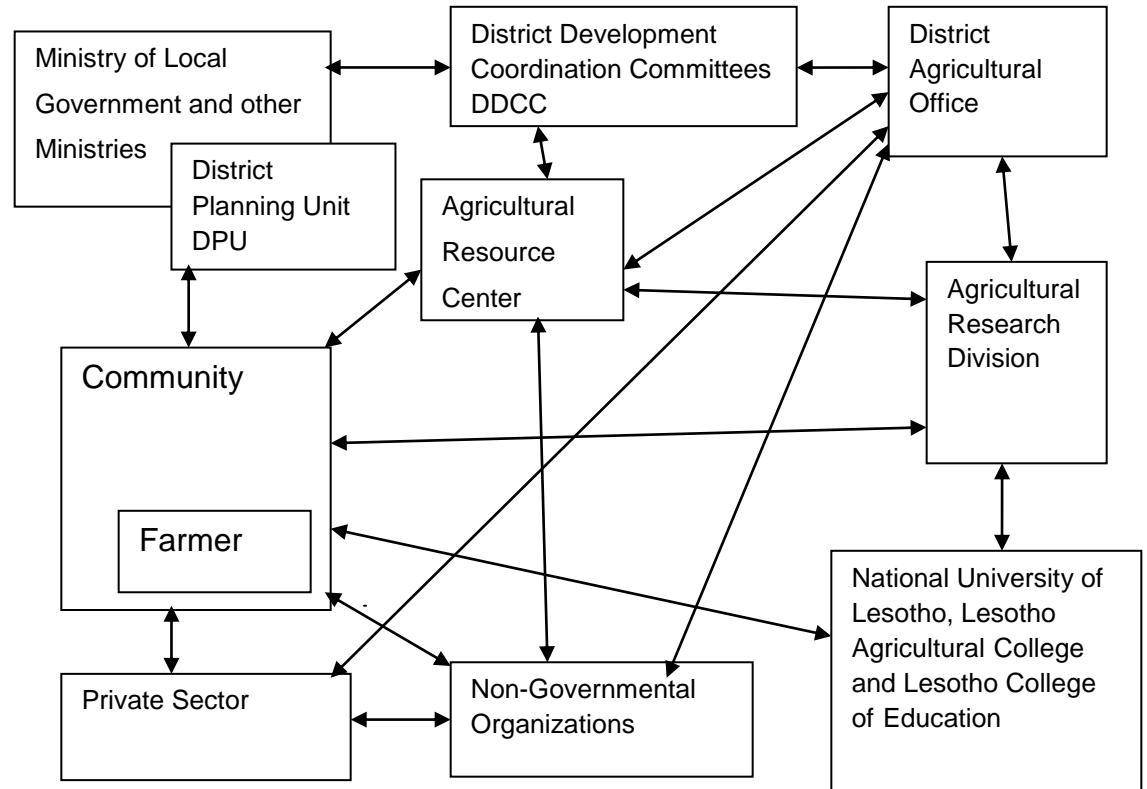
Source: (Ministry of Agriculture Cooperatives and Land Reclamation, 2000:22).

Figure 3 shows that extension services at District level largely comprises of the district head of departments and farmers are not represented. There is no direct connection between the District Development Coordination Committees and the farmers. The assumption is that their interests are represented through the office of District Agricultural Office. The district extension framework further illustrates the consolidation of agricultural plans within the district by the District Planning Unit (DPU) with other community developmental plans. However, there is still deficiency that is visible in the framework. A formal relationship between research, private

sector and non-governmental organizations is lacking. There is also no relationship between private sectors and resource centers. The framework does not seem to effectively use the agricultural resource centers which are the frontline extension service providers.

In comparison with the global extension system described in the above sections, Lesotho Agricultural Extension System fits the description of a linear traditional extension system which Blum (2007:6) describes. The same author provided the characteristics of a linear traditional extension system as follows:

- One main public system
- Extension as public good
- National coverage by public sector
- Centralized
- Technology focus
- Mandate for agricultural development
- Hierarchical lines of command
- Entirely public funded system

The above features are prominent in each of the figures and can be concluded that the Lesotho's extension system is dominated by the traditional extension system. The following section describes important points for consideration when developing a strategy to bring actors together.

2.5 Towards a new model for coordinated and innovation extension

This section sets out to provide guidelines to help in the adjustment of extension services from the traditional system to achieve rural

agricultural innovation extension. The model aims to optimise the involvement, collaboration and close coordination of relevant stakeholders at national, district and grassroots levels. Suggestions are made in which the output of extension reform could be more flexible to allow a multi-stakeholder intervention approach including that of Blum, (2007:6). The following are the characteristics of institutional and operational innovation system that the same author raised as the output of extension reform.

- Pluralistic system with public and private services
- Redefinition of roles and tasks of stakeholders(public, civil society, private
- Private sector driven by markets and funding-needs for tools to identify gaps and for coordination mechanisms
- Decentralized (need for coordination, role and influence of national level needs to be redefined).
- Problem, demand & market focus (requires new strategies and procedure, instruments, mechanism, etc.
- Broader mandate for agricultural and rural development
- Horizontal collaboration & multi-disciplinary teams (different and more management capacities needed)
- New funding mechanisms, client share costs according to their capacities.

Changing from traditional linear system to institutional and operational as described and presented above requires a good facilitation. According to Rajalahti *et al.* (2008:31), other than coordinating and improving patterns of interaction between players, the public sector has other important roles in facilitating AIS, such as supporting small-scale farmers to become partners in innovation

systems and to regulate innovation policies. The innovation model and deliberation processes are discussed below.

2.5.1 Innovation model deliberation process

A basic model of innovation that is directed at incorporating small-scale farmer's indigenous technical knowledge with formal (applied) research to change farming practices is proposed. According to Pant and Odame (2006:69), stakeholders vary and the contexts under which they work are dynamic, and as such a cookbook to prescribe the process of multi-stakeholders deliberation does not exist. To cater for such dynamics, actors may consider the following five generic steps as a general guideline to run a partnership process as Pant & Odame (2006:69) suggested.

2.5.1.1 Partner's identification and mobilization

Stakeholders involved in rural extension service delivery in a set area need to be identified and sensitized in partnership processes as the first step to build a sustainable and effective partnership (Pant & Odame 2006:70; Sanginga *et al.*, 2004:946). However partners and participation turnover should be minimized since this has a significant negative impact on the learning alliance suggested Lundy & Gottret (2005:15). A good orientation on partnership is essential to provide an explanation on the what, why, where, how and when to avoid partner withdrawals. A policy for fostering relationships between partners should also be outlined. To put more emphasis on the importance of policy, Sanginga *et al.* (2004:945) explain that after a year of collaborative work, an NGO partner that was selected withdrew to work on relief and

humanitarian work, and was no longer able to participate in a partnership.

2.5.1.2 Assessment of partner's capacity

Capacity of identified partners is very crucial in rural agricultural extension innovations. Assessment of partner's level of education and experiences, including their social and cultural backgrounds are important issues for rural extension services. Partner's flexibility and rigidity of working styles need to be assessed. Farmer's capacity to innovate in different disciplines such as plant protection, farming systems, seed selection procedure and veterinary services needs re-writing for consolidation of ideas. Extension worker's qualifications, skills and competence to identify innovative farmers need to be assessed. The capacity to collect, disseminate farmer's innovations for sharing and for further research should also be looked into. Actor's eagerness to work in partnership to shape existing technology to respond to farmers' production needs should be assessed.

2.5.1.3 Existence of Coordination among actors

It could be important for stakeholders to recognise existing coordination structures if there are any or perhaps, strengthen those that exist. In the case where there is tension among stakeholders, the causative factors should be found and sorted out before attempting to bring actors together. According to Bendegu'e *et al.* (2002:12), successful innovation depends on building local institutions, networks and organisations that help to mobilise very scarce resources of the communities and link them to external

networks. But Hall & Nahdy (in Pant & Odame 2006:63) have a different view, that there are systemic problems to implement new methods in old institutions, with the greatest challenge being to devise ways in which public sector organized science can be integrated into the complex matrix of individuals and institutions engaged in the innovation process.

2.5.1.4 Selecting appropriate approach

It is necessary to have different actors working together to achieve a common goal, the challenge notwithstanding. Assessment of stakeholder's capacity helps in the selection of an appropriate approach to allow knowledge generators to participate fully and interact with scientists, researchers and extension services providers to generate new and usable technologies.

2.5.1.5 Process of coordination and facilitation

For coordination to be vibrant, partners need to be motivated throughout the process both intrinsically and extrinsically. The process must be flexible to adapt to changes as learning occurs and new questions arise. Farmers, developers and researchers have to learn how to communicate better with each other (van der Pol, 2005:4). Extension workers should be trained constantly to match the changing level of farmers and to be able to facilitate processes aimed at promoting farmers to generate knowledge. This can be efficiently achieved with farmers' full participation. Conditions necessary for community participation in planning and timely information flow should be fostered.

The guidelines are essentially important to run a partnership process among actors. A good mobilisation of partners builds a sustainable and effective partnership. Skills and experiences of partners should be assessed and existing interaction may need to be strengthened. The following section defines the importance of policy to attain sustainable participation and coordination among actors and to enable innovation systems.

2.6 Agricultural Extension Innovation Policy

The broad objective of agricultural policy is to facilitate and accelerate technology transformation with a view to become self-sufficient in food production and improve the nutritional status of the population (Ministry of Agriculture Bangladesh, 1996:3). To achieve this, there are specific objectives that the government of Lesotho need to focus on. Wilkinson (2011:1) gave an example of removing impediments that prevent subsistence farmers from becoming small scale commercial farmers. This aligns with the views of (Mytelka 2000:28; Hall,2005:615) that innovation policies cannot be treated in isolation from other policies that affect the presence of critical actors, their habits and practices, their knowledge base and the nature and intensity of their interactions.

Madukwe (2006:2) made a point that the major problem in organising agricultural extension in developing countries is the absence of a legal and policy framework for providing the service. The same author highlights that putting in place a legal and policy framework is a basic way of conducting extension in developing countries as it helps to minimise the confusion in the effort to transfer agricultural knowledge to farmers. Kaaria *et al.* (2008:63) called for an urgent attention for comparative research to identify

policy options for promoting the engagement of small-scale farmers in markets. Hall *et al.* (2005:1) emphasized that policies are important in determining how people behave. Rivera (2006:64b) added that a favourable and responsive policy environment is crucial to support the advancement of agricultural knowledge and national agreement among its institutions and the people to promote innovation.

According to Blum (2007:17), policy orientation to support farmers at all levels (young, adults, and women) is required. It should improve coordination of extension services and strengthen the existing extension coordination efforts and structures. It should support market-led extension, innovative communication and trainings for farmers and service providers. The following section presents strengths and challenges in the agricultural innovation system.

2.7 Strengths and challenges in agricultural innovation system

Among other strengths of agricultural innovation systems, the approach examines the multiple conditions and relationships that promote innovation in agriculture (World Bank, 2011:5). Multi-stakeholders processes may not solve conflicts and problems but they can make things better through helping parties to partly understand other stakeholders' views and interests (Warner, 2005:12). Biggs (1990:1493) spelled out that the use of multiple source models as a new agricultural research and extension innovation involving different actors provides a shift in institutional models and knowledge transfer from research centres to clients. This encourages a search in many places for innovations rather than only in productivity-increasing research.

The key feature of the multiple source models is the recognition of agricultural research and technology promotion system contain a multitude of actors and institutions that have very diverse objectives (FAO, 2010:4; World Bank, 2011:4; Martin *et al.*, 2011:48). However, Hall *et al.* (2003:233) have identified challenges for the innovation systems framework. The challenges include setting of technical research priorities that are multi-stakeholder driven and the application of the processes. New partners can bring research priorities with them which they would want to be included in the setting of priorities. Adoption and support of innovation systems by actors are other challenges that the same authors pointed out.

2.8 Conclusion

This chapter has presented a broad, active and diverse range of stakeholders involved in the provision and facilitation of extension service delivery. The framework for global agricultural innovation concept and principles as elaborated in the literature by (Rajalahti *et al.*, 2006:5; Rivera, 2006b:60; World Bank, 2006: VI) have indicated how to employ best practices to improve the performance of agricultural extension services delivery from a single sector to a multi-sector approach, stressing the need for coordination. As highlighted putting in place a legal and policy framework is one basic way of conducting extension in developing countries as it will help to minimise the confusion in the effort to transfer agricultural knowledge to farmers.

CHAPTER 3

RESEARCH DESIGN AND METHODS

3.1 Introduction

The purpose of this chapter is to outline the methods used to collect primary and secondary data. Two techniques (quantitative and qualitative) were used to collect information in October 2010. Mixed methods were used to provide better opportunities to address the objectives of the study. Tashakkori and Teddlie, 2003 (in Saunders *et al.*, 2009:153) Primary data was collected from farmers within the two areas and from different organisations providing extension services. Farmers sampling was randomised and stratified while convenience sampling was used for agricultural extension organisations. Focus group discussions were engaged to establish what farmers really think and feel about extension services offered by different extension organisations (Krueger & Casey, 2000:7). A pre-test of data collection instruments was also conducted in Nazareth.

The chapter also outlines the study areas where the research was conducted and the criteria used for selection of the sites. The primary reason for selecting the locations was the prevalence of overlapping agricultural extension services as a result of poor coordination among actors. All respondents consulted were found in the Lesotho Highlands Water Project catchments namely 'Muela in Bothe-Bothe and Katse in Leribe. It outlines the research design, including sampling, data collection procedure, data processing and analysis. The characteristics are analyzed in terms of their

relationships with multi-stakeholder interventions systems in rural agricultural extension delivery. These data will be essential in the following chapters to strengthen extension organisation on a long term basis.

3.2 Description of the study area

The locations have the worst soil erosion and land degradation problems which no single organisation can attempt to address successfully. As a result, interventions tend to be multi-stakeholder driven, involving many actors in rural development. The primary reason for selecting the locations was the prevalence of overlapping agricultural extension services as a result of poor coordination among actors. Secondly, the locations were selected by the researcher because they fall within the Lesotho Highlands Water Project (LHWP) catchments, the largest water scheme in Lesotho and Southern Africa.

3.2.1 'Muela Catchment

The 'Muela catchment (Figure 4) is the only LHWP catchment in the Lesotho lowlands, being situated between the foothills and the escarpment of Maloti mountain range. In its physical description, the catchment covers an area of 2,869 ha. The topography is mountainous and steep and has an altitude ranging from 1,762m to 3,104m. The catchment contains one central valley and numerous tributaries flowing into the central stream, the Nqoe River (SMEC/LHDA, 2010:15). 'Muela is the smallest LHWP catchment and reservoir just before water is transferred to the Republic of South Africa. This catchment has the worst erosion and land

degradation problems due to the underlying sandstone geology in the lower parts of the catchment. The catchment is made up of eight sub-villages and these are as follows, St Helena, Moholeng, Pabalong, Phahleng, Boinyatso, Taetsi, Bela-Bela and 'Muela and there are 573 households. Major activities include bee keeping, livestock, and vegetable and grain production. (SMEC/LHDA, 2010:15).

Figure 4: Map of 'Muela catchment in the Eastern Lowlands of Lesotho
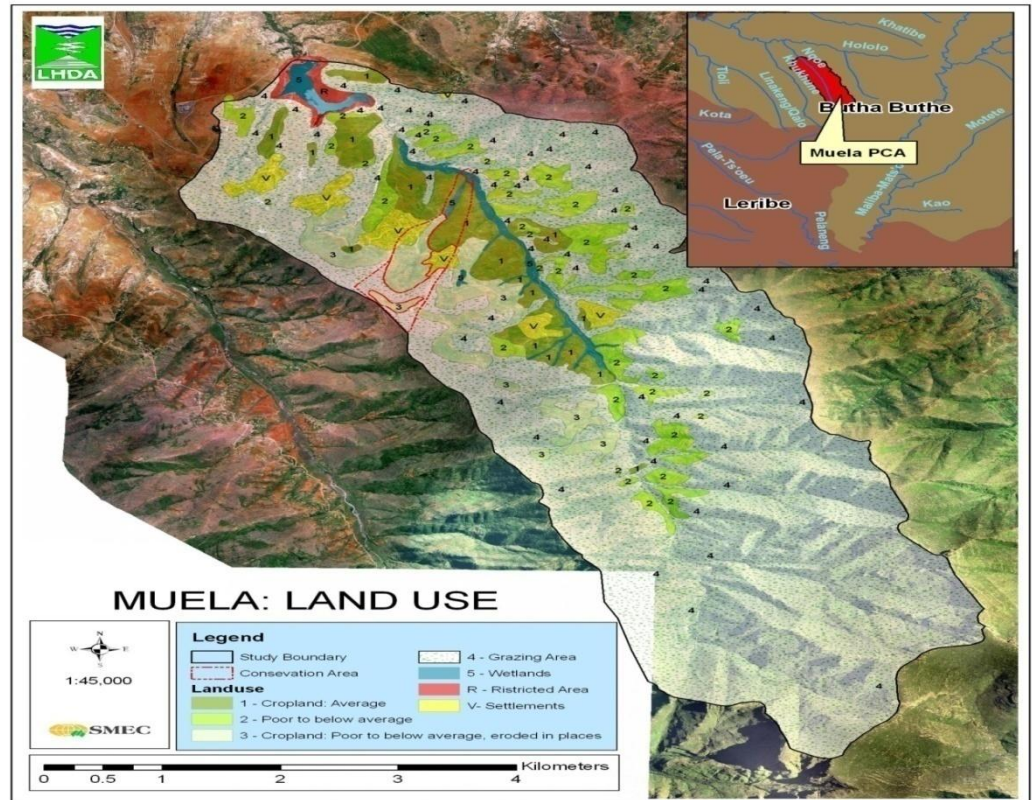
Source: (SMEC/LHDA, 2010)

3.2.2 Ha Lejone - Katse Catchment

Ha Lejone is a village situated in the Katse catchment (Figure 5) upstream of the Maliba-Mats'o River on the north western banks of the reservoir covering an area of 1028 ha. The area is 15 km East of Mafika-Lisiu Pass that links the highlands with the lowlands. The elevation varies between 2059m and 2952m (SMEC/LHDA 2010:16). The area consists of six-sub-villages and these are Ha Nkheo, Thoteng, Moreneng, Ponts'eng, Ha Lukase and Ha Poli and there are 530 households. This area is suitable for cultivation with a large portion of the catchment consisting of relatively flat foot slopes/plateau. Livestock keeping is the major activity (Drimie, 2002:10).

Figure 5: Map of Katse catchment in the Highlands of Lesotho
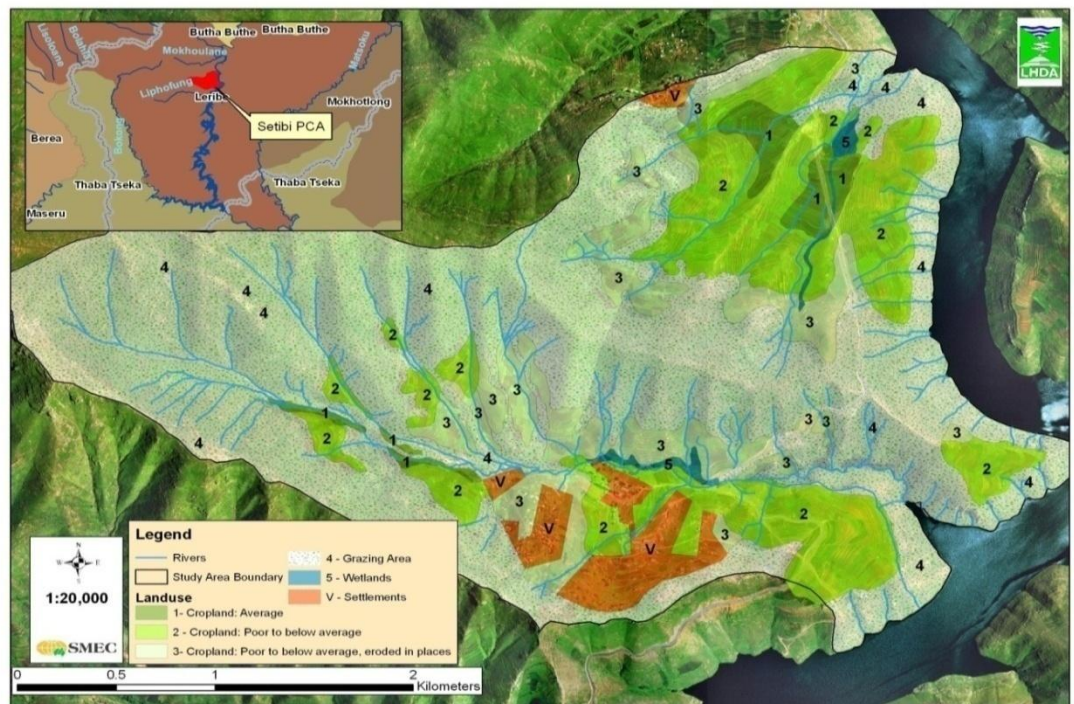
Source: (SMEC/LHDA, 2010)

3.3 Sampling and data collection procedure

3.3.1 Sampling

The main goal of sampling elements of a population was to draw inference about the large population (Barreiro & Albandoz, 2001:3; Saunders *et al.*, 2009:210). Two sampling techniques probability sampling and non-probability sampling were used to select respondents. Stratified random sampling was used to select farmers to ensure that the sample is representative (Barreiro & Albandoz, 2001:5; Leedy & Ormrod, 2010:205). Convenience sampling is a type of non- probability sampling used to select service providers.

3.3.1.1 Stratified random sampling for farmers

Sampling was based on the population of the villages which the researcher, in collaboration with the local authorities, verified by re-writing the names of the current households heads in September 2010. 'Muela has 8 sub-villages and 573 households while Ha Lejone has 6 sub-villages and 530 households (Table 4). The sub-villages became stratums. Stratums have more precise information even though the technique is time consuming as compared to non-probability (Barreiro & Albandoz 2001:8; Saunders *et al.,*2009:228).

A unique number was assigned to each household while still keeping the identity of each catchment. A total of 201 households were sampled (99 from 'Muela and 102 from Ha Lejone) to ensure adequate representation. Stratified households were randomly sampled by selecting the fifth household starting from the first in the

sampling frame. Whenever an identified household head was absent, the next household was selected.

Table 4: Definition of study area and spread of interviews

Catchment name	Village number & name	Household number (Sept,2010)	Number of households sampled	%
'Muela	208 'Muela	92	16	7.88
	204 Boinyatso	119	20	9.85
	205 Bela-Bela	55	10	4.93
	206 Taetsi	70	14	6.90
	203 St Helina	116	21	10.34
	201 Paballong	17	3	1.48
	202 Moholeng	66	10	4.93
	201 Phahleng	30	6	2.96
Katse(Ha Lejone)	402 Ha Nkheo	145	28	13.79
	406 Ha Poli	139	25	12.32
	404 Moreneng	97	20	9.85
	405 Ponts'eng	20	4	1.97
	403 Thoteng	59	12	6.40
	405 Ha Lukase	70	13	6.40
Total	14 villages	1095	202	100

Source: Author's compilation

3.3.1.2 Convenience sampling for Extension Service Providers

Extension workers from public and non-governmental organisations were selected using convenience sampling. This was done to verify the responses provided by farmers about the rural agricultural services rendered. According to (Anderson *et al*. 2008:290; Black,2009:224), convenience sampling is an easy method for obtaining a sample but Frederick *et al*. (2011:152) argued that the

sampling can probably be biased hence no generalisation can be drawn from the samples. Only available extension workers found at duty stations during the consultations were considered. A total of 18 extension staff members were interviewed in the study areas (6 from 'Muela and 12 from Ha Lejone). Table 5 present summaries of service providers consulted.

Table 5: Organizations code of extension workers consulted.

Name of Catchment	Catchment and organisation code	Number of workers consulted
'Muela	A01	4
	A04	2
Katse(Ha-Lejone)	B01	10
	B02	2
Total	4	18

The catchment codes are as follows: A for 'Muela B for Ha Lejone while extension organisation codes are; 01 for the Public sector and 02 for the NGOs.

3.3.2 Data Sources and collection

The study used multiple methods of data collection: documents review, structured questionnaires with key informants, and focus group discussions with the farmers. The idea of combining these approaches in a single study was to collect as much information as

possible and to have one method complementing one another (Saunders *et al*., 2009:153).

3.3.2.1 Secondary data

Secondary data is data collected from source that has been published, for example, books and journals (Saunders *et al*., 2009:600). It was found to be important in the study where primary data was difficult to obtain and where it did not exist. Secondary data in this study has helped the researcher to improve her understanding of the problem of poor coordination and provided a basis for comparison between the global innovation system with the extension practices in Lesotho to make out what the gaps and the deficiencies were and what additional information needs to be collected (management study guide, 2008:1).

3.3.2.2 Primary data

Primary data were collected through structured interviews and focus group discussions. Structured interviews were used to collect quantifiable data that are referred to as quantitative research interviews by Saunders *et al*. (2009:320). These interviewer-administered questionnaires (Appendix A) were used to stratified randomly selected individuals by the researcher and the research assistants. Two experienced enumerators assisted the researcher to collect data and to translate questionnaires from English language into Sesotho language during the interviews. They were engaged to assist the researcher to complete the survey within a period of 4 days.

A one - day meeting was convened to familiarise the research assistants with the questionnaires. This was followed by pre-testing at 10 households in the Nazareth area which has similar farming conditions to the study areas but outside the Lesotho Highlands Water Project catchments and is found in the lowlands, 40km from the capital, Maseru. The results were discussed and changes were made prior to the actual investigations.

Participants during focus group discussions revealed what they thought and felt about extension services offered by different extension organisations. There were four groups of ten individual farmers, two groups in 'Muela and two other groups in Ha Lejone. Two moderators i.e. the researcher and her assistant facilitated the discussions to be able to understand the attitudes of people towards a multi-sector extension approach (Appendix B). A recording device was used to record the proceedings of the group discussions and transcribed at a later stage.

A problem encountered during the survey was that it coincided with the physical conservation works arranged by the Lesotho Highlands Development Authority where the communities worked as labourers. The selected heads of households were notified by the local village authority prior to the survey to assemble at one place. This raised their hopes as they thought they were getting employed since the researcher is an employee of the Lesotho Highlands Development Authority. Further limitations were that questions needed communities to give their views on the current extension service delivery. Again questions were in English and had to be translated in Sesotho, which could have also distorted the message somehow.

3.4 Data processing and analysis

The questions in the questionnaire were structured and had coded responses except a few. Data were gathered and cleaned before being entered into a computer using Microsoft Excel. The questionnaires were checked repeatedly for errors. Mistakes were corrected and final modifications were made. Data collected were mainly categorical and their values could not be measured numerically, but can either classified into sets (Saunders *et al*., 2009:590). The type of data collected was descriptive, and descriptive analysis was used to describe data and the characteristics of what has been studied. The main technique used for data analysis included frequency distribution with the use of tables and charts to illustrate data and to facilitate analysis. Chi-square test was used to investigate whether distributions of categorical variables differed from one another or the two variables were associated (Saunders *et al*., 2009:588).

3.5 Conclusion

The purpose of this chapter was to identify stakeholders involved in agricultural service delivery. Much of this chapter focus on the type of data collected from farmers and extension service providers. Secondary data were important source of information for comparison between what was found in the literature and from the primary data. The comparison was intended to assist in the development of the best fit model of agricultural innovation systems in Lesotho. Analysed data is discussed in the following chapters 4 and 5.

CHAPTER 4

SOCIO-ECONOMIC CHARACTERICS

4.1 Introduction

This chapter presents an overview of some of the socio-economic characteristics of the respondents in the study areas which influence the processes of adoption in agricultural innovations. Some of the parameters affecting adoption of knowledge in farmers are age, gender, education and income. According to Davidson *et al.* (2001:8), age and education are very crucial factors in agricultural innovation systems as older, less educated farmers place unrealistic expectations on extension advice and become frustrated if the new activity is not successful. Bruening *et al.* (2002:45) reported the need for supporting structures in South Africa to improve farmers' self-esteem and provide needed skills to overcome the financial and educational obstacles. This affirms the importance of the parameters in the process of adoption.

On the other hand, it is in the interest of agricultural extensionists and economists that farmers adopt new agricultural technology (Oladele, 2005:250). Swanson & Rajalahti (2010:78) have also found educational level of extension staff to be important in carrying out different types of extension activities that can help small-scale men and women farmers diversify their farming systems within a dynamic national and global agricultural economy. Davidson *et al.* (2001:11) reported that in Pakistan extension organisations preferred better educated farmers than their illiterate counterparts. Education is an important factor which has influence on agricultural

extension messages and approaches. This chapter presents demographic characteristics of the respondents in 'Muela and Ha Lejone and how they influence better adoption of innovations. Tables 6 to 8 present a brief overview of the respondents by age, gender and education.

4.2 Age and gender of the respondents

As set out in the Table 6, age and gender of the respondents were investigated as a means to better understand their demographic features.

Table 6: Some of the respondents' socioeconomics characteristics by area

Age	'Muela				Ha Lejone			
	Farmers		Service providers		Farmers		Service providers	
	n	%	n	%	n	%	n	%
25-35(youth)	18	18	2	33	12	12	8	67
35-55 (adults)	57	58	4	67	61	60	4	33
55+ (senior)	24	24	-	-	29	29	-	-
Total	99	100	6	100	102	100	12	100
Gender								
Male	60	61	4	67	59	58	7	58
Female	39	39	2	33	43	42	5	42
Total	99	100	6	100	102	100	12	100

Table 6 indicate that the highest percentage which is approximately 60% of the farming respondents in both areas are adults compared to 24% in Muela and 29% Ha Lejone who have exceeded 55 years of age. This could be due to the fact that most of the adults are retrenched from the mines in the Republic of South Africa and have returned home. This is found to have a positive effect because around (60%) of males are back and the areas have regained human resource in innovation and physical capacity which was lost due to migrant labour (FAO, 2007:10).

 It is also an advantage to have young and adults as farmers because they actively carry out agricultural activities more practically as they are experienced and mature to make informed decisions in farming. According to the adoption theory that Muneer (2008:141) described, this representation is a good ground for success of extension campaigns and programs that aim at dissemination and adoption of any agricultural innovations. Young farmers have been found to be more innovative than their older counterparts Rogers, 1993 (in Muneer, 2008:141). Findings illustrate that most households are headed by male in 'Muela and Ha Lejone.

On the other hand, sampled respondents in extension services fall between the age category of youth and adults (33% and 67%). This representation is important as they can command respect and take responsibility in the work environment. Furthermore, consulted extension agents are within the age category which allows them to further their studies. Within this age category extension agents are flexible, trainable, and adaptable to new technology.

From the sampled respondents, there are fewer women extension agents in 'Muela than in Ha Lejone. The small proportion of female extension agents in both areas can be attributed to socio-cultural factors which favours men to women and restrict interaction between male agents and female farmers or vice - versa (Swanson& Rajalahti, 2010:80). In the highlands of Lesotho, adverse climatic conditions and terrain can restrict female extension workers. While in some other communities, women are not allowed to go near animals or in a kraal to collect manure for fear that female animals will fail to show 'heat' signs. Similarly, Truitt (1998:1) put forward that during their monthly period, female are not allowed to go near crops for fear that the crops will be ruined.

4.3 Educational background of farmers

As a means to understand the educational background of the farming communities, a table below presents an overview of the respondents.

Table 7: Farmers educational background by area

Education	'Muela		Ha Lejone	
	n	%	n	%
Nil	18	18	26	27
Primary	68	69	66	65
Post Primary	13	13	10	8
Total	99	100	102	100

The findings of the research in Table 7 indicate that the majority of respondents (65% and 69%) in 'Muela and Ha Lejone received primary education while 18% and 27% did not attend any formal education respectively. Since illiterate farmers are less innovative than their literate fellows, this high percentage of respondents with low level of education as in Table 7 presents a major constrain to the effort exerted to disseminate extension messages and to convince farmer to adopt (Munner, 2008:141). Other than formal education, respondents have indigenous technical knowledge that needs to be explored and embraced instead, of trying to replace it with exotic knowledge. Again they have been exposed to different farming experiments and knowledge transferred occurred over time.

4.4 Education of service providers

High qualifications in the area of agricultural extension are essential and important in extension service delivery. Extension agents' highest completed qualifications in agriculture are presented in Table 8.

Table 8: Service providers' highest degree completed by area

Highest degree completed	'Muela		Ha Lejone	
	n	%	n	%
Certificate in Agriculture(3years)	-	-	2	17
Diploma in Agriculture(3years)	1	20	6	49
Bachelor of Science in Agriculture(4years)	4	60	2	17
Non-Agriculture	1	20	2	17
Total	6	100	12	100

Respondents in the study areas as reflected in Table 8 indicate that 60% of the extension officers in 'Muela had a Bachelors degree, around 50% in Ha Lejone had a Diploma, around 20% in both areas had no agricultural qualifications and fewer than 18% in Ha Lejone had a Certificate in agriculture. Most extension systems categorises positions based, in part, on educational level (Swanson & Rajalahti, 2010:78). According to the same authors in most developing countries the extension field workers at the sub district or village level have only a three year diploma or two year certificate. In Lesotho, the highest percentage (60) of the respondents with the university degree is found in the front line. According to Bruening *et al.* (2002:45) the extension officers need to possess the skills, knowledge and adequate resources to help farmers succeed. The age of extension officers in the study areas allows them to upgrade their own knowledge and skills to be effective training facilitators for social change.

4.5 Socio-economic status of farmers

The income farmers have can influence their decision to take up an innovation. Table 9 present contributions of different activities as major sources of income for primary stakeholders in 'Muela and Ha Lejone.

Table 9: Frequency distribution of respondents illustrating sources of income

Source of income	'Muela		Ha Lejone	
	n	%	n	%
Full time	73	74	78	76
Part time	26	26	24	24
Total	99	100	102	100
Chi-square=0.2008, P = 0.7446				
Source of income	'Muela		Ha Lejone	
	n	%	n	%
Social grants/S&R	14	14	9	9
Formal employment	8	8	11	11
Agric Produce	43	44	77	76
Other	34	34	5	4
Total	99	100	102	100
Chi-square =32.7206, P=0.0001				

In the two areas, about 75% of the respondents depend on farming as their main occupation while about 25% do farming part-time. This is affirmed by 43% respondents in 'Muela and 76% in Ha Lejone who sell agricultural produce to generate income. Income per household was not investigated in the study.

In 'Muela non-agricultural activities have grown important and constitute 34%. These include sales of traditional beer and clothes. They also sell food and snacks to school children from all over the country who visit the 'Muela hydro-electric power station between September and November. Other sources of income than farming were found to be social grants and remittances contributing (14% in 'Muela and 9% in Ha Lejone) to the rural livelihoods.

4.6 Conclusion

A decision to take up an innovation and continue its use is influenced by the age, educational level and economic status of a farmer. Gender is also very crucial in that farming decisions to a large extent are still approved by men rather than women. The results have a positive effect on the adoption of innovation systems as the extension workers directly influence the principal household decision makers. At the same time, data indicates that the same decision makers are within the age that allows them to be innovative and to carry out farming activities but their low level of education however, has a negative effect on the adoption of innovation systems including dissemination of extension messages.

CHAPTER 5

RESULTS AND DISCUSSIONS

5.1 Introduction

The purpose of this chapter is to discuss the results of the study. It begins by presenting different stakeholders involved in agricultural extension services in the study areas and defining their scope of service. The different roles of stakeholder organisations were analysed to appreciate who does what, in order to identify gaps and overlaps. It presents coordination status among extension organisations. It provides the results from comparison between secondary and primary data; best global innovative models of extension coordination as identified in Chapter Two and the practices in Lesotho. It provides a description of an innovative model for achieving an improved rural extension service delivery in Lesotho. An innovative framework which will advance the involvement, collaboration and close coordination of relevant ministries and other stakeholders at central, district and front- line levels. The chapter concludes by making policy recommendations and regulations to enable innovation systems in Lesotho which will not only promote extension innovations from outside the country but also from within. A recommendation for policy which does not only focus on organising farmers, but also paving the platform for multi-stakeholder intervention approach is made.

5.2 Stakeholders analysis

As identified in Chapter Two, stakeholders are categorised into public sector, NGOs, private sector and farming community. In 'Muela and Ha Lejone the following stakeholder categories were identified; governmental organisations (including parastatals), NGOs, private institutions, farmers and farmer organisations (Table 10). This information was collected from the respondents through questionnaires and focus group discussions.

Table 10: Stakeholders involved in rural agricultural extension service delivery

Governmental Organizations	Non-governmental organisations	Parastatal	Private institutions	Farmer, farmer organizations
MAFS (Pelaneng & Khukhune Resource Centres)	World Vision	Katse Operations Branch (K.O.B)	General dealers	Pelaneng Range Management Association (RMA).
Ministry of Forestry and Land Reclamation (MoFLR)	Serumula	'Muela Operations Branch (K.O.B)	Botha-Bothe Farm Center	Farmers Cooperatives and Unions
Ministry of Local Government &Chieftainship Affairs(MoLGCA)	F.A.O	Integrated Management Project(ICM)	Boloka Hardware and Farm Equipment	
Ministry of Tourism, Environment and Culture (MTEC)			Paulina Seedlings Center	
Ministry of Youth and Women				

Source: (Focus group discussions in 'Muela and Ha Lejone, 2010)

5.2.1 Government Organisations

Five government ministries in the two areas were identified; Ministry of Agriculture and Food Security (MAFS), Ministry of Forestry and Land Reclamation(MoRLR), Ministry of Local Government and chieftainship Affairs(MoLGCA),Ministry of Tourism, Environment and Culture(MTEC) and the Ministry of Youth and Women Affairs(MoYWA). Table 11 summaries the different ministries providing extension services in the study areas.

Table 11: Respondents scope of service by area

Area	Government Ministries	Areas covered by Extension Services/Activities
'Muela	MAFS (Khukhune Resource Centre)	Horticulture, Agronomy, Irrigation, Livestock production,
	MoFLR	Soil & water conservation, Range management and Forestry, Integrated Catchment Management
	MoLGCA	Soil & water conservation, Range management and Forestry
	MTEC	Environment & conservation,
	MoYW	Women & youth clubs
Ha Lejone	MAFS (Pelaneng Resource Centre)	Horticulture, Agronomy, Irrigation, Livestock production,
	MoFLR	Soil & water conservation, Range management and Forestry, Integrated Catchment Management
	MoLGCA	Soil & water conservation, Range management and Forestry
	MTEC	Environment & conservation,
	MoYW	Women & youth clubs

Respondents reflect that extension services on soil and water conservation are provided by three ministries directly (MoFLR, MoLGCA, and MTEC). They provide training and extension services on forestry and natural resources management. The MAFS through Pelaneng and Khukhune Resource Centres provide extension and training for the farmers residing in the surrounding villages on agricultural production and also promote conservation agriculture. The advantages and disadvantages of the different extension organisations rendering similar services to the same category of farmers in one area and the extent of coordination among actors are outlined in the following sections.

5.2.2 Parastatal

Lesotho Highlands Development Authority is the only parastatal through its operation branches ('Muela Operation Branch in 'Muela and Katse Operation Branch in Katse) and Integrated Catchment Management Project (ICM). The two operation branches and ICM, in collaboration with the line ministries provide extension services to the communities residing within the catchments, focusing on individuals and groups affected by the Lesotho Highlands Water Project.

5.2.3 Non-Governmental Organisations (NGOs)

There are three non-organisational organisations (local and international) in 'Muela and Ha Lejone which offer rural agricultural extension services and targeting rural and peri-urban areas. These are Serumula (local) and other two international NGOs, FAO and World Vision International-Lesotho. They offer training on crops, livestock, and marketing. They are also involved in agricultural

inputs supply including livestock starter stock and seed. NGOs work in partnership with governmental organisations particularly with the Ministry of Agriculture and Food Security.

5.2.4 Private sector

The private institutions include Botha-Bothe Farm Center, Boloka Hardware and Farm Equipment and Paulina Seedlings Center. Priviate institutions provide agricultural extension services on agronomy and livestock services, targeting both small and large scale farmers. Most of the agricultural production inputs and equipment they sell, recommended by the MAFS and/or farmers.

5.2.5 Farmers and farmer organisations

This category consist of primary stakeholders in 'Muela and Ha Lejone practising subsistence farming, either as groups in community gardens producing mainly vegetables under intercropping systems or as individuals. This sector includes associations, cooperative and trade unions. Pelaneng Range Management Association (RMA) in Ha lejone provides extension services on livestock and range issues, targeting wool and mohair farmers. Cooperatives and trade unions offer inputs and product marketing and sometimes loan facilities.

According to Swanson & Rajalahti (2010:95), it takes different extension approaches and methods by different extension organisations to achieve different agricultural goals. However, data from the study areas reflect four ministries providing similar extension services to the same category of farmers. The next

section describes the extent of coordination among actors in the study areas.

5.3 The extent of Coordination

According to (Swanson & Rajalahti, 2010:81), the goal of coordination is to diversify the expertise and increase competence of current extension staff to reflect the changing agricultural economy. It would be interesting to find out if the practices in Lesotho are in line with this goal in order to achieve a ratio of 1 agent for every 500 farmers. An effective means to reach target audience would be to organise service providers to work in partnership to pool their efforts and resources. This would promote efficiency in the extension service to address specific needs of farmers at the same time avoiding duplication of efforts. This section determines the extent of multi-stakeholders coordination starting with farmers and followed by service providers.

5.3.1 Farmer's perspective

Based on the information presented in Tables 10 and 11, the respondents were asked to describe the benefits of having different organizations in rural extension service delivery. Some respondents emphasised the advantages (Table 12) while others emphasised the disadvantages (Table 13) of having different extension organisations. Data presented in tables below were collected through household questionnaires and substantiated by focus group discussions.

Table 12: The advantages of different extension organisations

Advantages of multiple service providers	'Muela		Ha Lejone	
	n	%	n	%
Different agricultural inputs	20	13	34	22
Different skills/knowledge	75*	49	76*	50
Subsidy	1	1	11	10
Job opportunities	12	5	-	-
Working together	42	32	27	18
Total	150	100	148	100

N.B respondents were allowed to give more than one response. * indicates multiple responses

The advantage that the majority of respondents (50%) pointed out was provision of different skills to farmers that are served. At least 32% of the respondents in 'Muela and 18% Ha Lejone reported to have seen some extension organisations holding farmers' event together. Provision of different agricultural inputs is another advantage that 13% of the respondents in 'Muela and 23% Ha Lejone mentioned. On the other hand, there are some respondents in the study areas who felt that several extension organisations is a disadvantage, as presented in table below.

Table 13: The disadvantages of different extension organizations

Disadvantages of multiple service providers	'Muela		Ha Lejone	
	n	%	n	%
Division	10	20	1	8
Confusion	18	35	3	23
Exploitation	9	18	1	8
Duplication of efforts	6	12	2	15
Hinder progress	7	14	3	23
Poor implementation	1	2	3	23
Total	51	100	13	100

The highest percentage (35) in 'Muela and (23) Ha Lejone felt confused by different extension organisations providing similar activities while 20% in 'Muela felt that these type of services are dividing. Ha Lejone 23% mentioned that these overlapping activities do not only hinder progress, but also result in poor implementation of agricultural activities. During focus group discussions the following description in Table 14 was reflected by the respondents to emphasis the disadvantages of having several extension organisations rendering similar extension services.

Table 14: Description of the disadvantages of different organisations in extension

Disadvantage	Description
Division	Respondents are of the opinion that service providers divide them through selection of target groups and individuals to be served.
Confusion	Respondents mentioned that they are usually left confused by the criterion used to select target groups and individuals. Duplicated activities by different organizations can also cause confusion.
Exploitation	Respondents feel exploited by the service providers to meet their organizational objectives.
Duplication of efforts	Communities indicated that these organizations target the same people in a village who are said to be progressive. Their efforts are concentrated on the same individuals or groups.
Hinder progress	Extension organizations target people with less interest in certain agricultural activities due to lack of collaboration among actors, so very little or no progress result. For example, a group was assisted with poultry starter stock while the group was interested in vegetable production.
Poor implementation of agricultural activities	Extension organizations spent more time competing for farm families whom are said to be hard working or good performers.

5.3.2 Service providers perspective

Respondents were asked to rate the degree at which the extension programmes they offer overlap with those of others on a Likert-type scale (ranging from 1 as never to 5 as always). Respondents rated the degree to which extension activities overlap 4, which is high and affirms the information presented from farmers in Tables 13 and 14. Prevalence of overlapping agricultural activities is generally high 4 in 'Muela and 5 Ha Lejone (where 1 is not prevalent and 5 as very prevalent). Data collected from extension organisations and farmers show a problem of insufficient coordination among actors.

Table 15 presents the attempts that were made by service providers who participated in the study to reduce the frequency and prevalence of overlapping activities among themselves.

**Table 15: Respondents attempts to coordinate efforts by area**

Attempts to coordinate	'Muela		Ha Lejone	
	n	%	n	%
Team up	5*	42	7*	35
Meetings	4*	33	5*	25
Integrating plans	2	17	4	20
Share	1	8	4	20
Total	12	100	20	100

N.B respondents were allowed to give more than one response.* indicate multiple responses

Table 15 illustrates that there are some extension organisations that invite others to participate in farmers' events that they organise. Slightly over 40% of the respondents in 'Muela and 35% Ha Lejone reported to team up with other extension service providers to avoid conflicts and duplication of efforts. Slightly more than 30% of the respondents in 'Muela and 25% Ha Lejone reported to have attended meetings with the line ministries. Around 20% of the officers in both areas integrate their plans. Furthermore, public extension experts serve as resource persons and are afforded transport and accommodation and in some cases, honoraria by private institutions. In addition to the attempts made, service providers suggested that the Director of Field Services lead

the process, facilitate, and motivate coordination platforms (Figure 6).

Figure 6: Coordination leadership as suggested by service providers
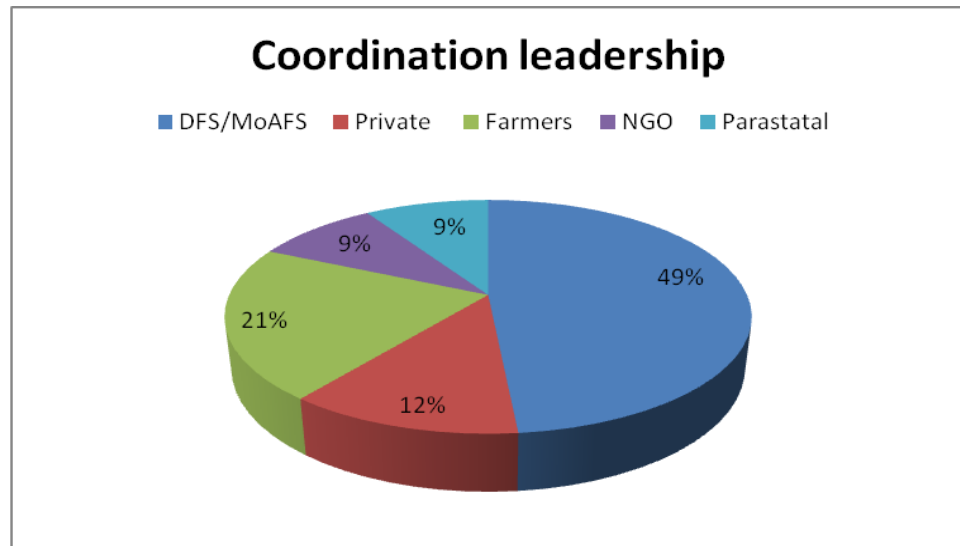
Nearly 50% of the respondents recommended the DFS to take the leading role in organising coordination forums at all levels. Besides, the department is mandated by the government of Lesotho to provide and facilitate extension services delivery. It is important that there are representatives from other extension organisations to assist the department in its leadership role.

Extension organizations offer overlapping extension activities and where convenient, they either team up to share limited resources or integrate their plans. This convenience coordination based on a friendship, relative or neighbourhood is insufficient. Coordination hinging on personal relationships is usually temporary and, therefore, there is a need to formalize coordination among

extension organisations to strengthen existing coordination structures. The following section presents a comparison between global innovative models and the practices in Lesotho.

5.4 Global innovative models versus Lesotho's extension practices

This section compares and contrasts best global innovative models of extension coordination as identified in Chapter Two and the practices in Lesotho as found by this study. Globally, the framework shows existence of coordination but in Lesotho a linear framework of technology transfer dominates the extension system. This is illustrated in the national extension structures presented in Figures 1, 2, & 3. Other than the figures, the tables below further emphasis the linear approach practised in Lesotho where farmers received different extension services from different sources which did do not necessarily match their farming requirements. Tables 16 &17 present such examples in 'Muela and Ha Lejone.

Table 16: Support that farmers receive from different extension organizations

Organisational support to farmers	'Muela		Ha Lejone	
	n	%	n	%
Grant	95*	4	96*	6
Production inputs	8	92	15	85
Loans	-	-	99	3
Food aid	96*	3	64*	37
Other	61*	38	72*	29
Total	260	137	346	160

NB. Respondents were allowed to give more than one response.* indicates multiple responses.

A significant proportion of respondents (92% in 'Muela and 85% Ha Lejone) provides production inputs followed by other (38% and 29%) which could be on provision of different training workshops (horticulture, agronomy and livestock) field demonstrations, trials and field excursions in and outside the study areas. These trainings are meant to cater for the climatic conditions in 'Muela which allow for winter and summer growing seasons and Ha Lejone where the harsh climatic conditions allows only summer cropping. It was considered essential to ask farmers a question of perceived performance of extension organizations. Table 17 illustrates the services and assistance that farmers seek from extension organizations.

Table 17: Farmers requirement to succeed in farming

Farmers requirements	'Muela		Ha Lejone	
	n	%	n	%
Technical support	-	-	24	22
Production inputs	25	25	13	13
Loan	1	1	1	1
Technical support and Production inputs	54	55	36	35
Technical support , Production inputs and Loan	16	16	27	28
Other	3	3	1	1
Total	99	100	102	100

Farmers appreciate a benefit of combining activities as indicated in the table above. Results show that the majority of respondents (55% in 'Muela and 35% Ha Lejone) would prefer a combination of technical support with either financial support or production inputs

or all of them. Oladele (2006:253) highlighted the importance of support through extension visits to farmers who have adopted knowledge. It is, therefore, important that extension visits to provide support are sustained. This approach of combining services will bring extension organisations together and to interact as loans, production inputs and technical expertise may not be provided by a single organisation.

Data presented in Table 11 and the mismatch in extension activities illustrated in tables 16 and 17 are the result of the following bottlenecks as observed in the Lesotho's extension system framework shown in Figures 1and 2.

- Poor inter-ministerial, inter-departmental and inter-institutional extension coordination. There are no institutional or functional relationships between DAR and DFS, according to the National Action Plan for Food Security (NAPFS) Main Report (2006:49) this is the major limitation in Lesotho's extension system.
- Local and International NGOs and the National University of Lesotho play an important role in extension systems. However, relationships between these institutions and public extension services sector are not clearly defined.
- Overlap of activities exists between research and technical departments at national, district and grassroots level. For example, existence of an agronomist within research and at three different levels within the department of crops. Qualifications at these levels are the same (Degree in general agriculture) except for Area Technical Officers (ATOs) who are Diploma holders. They only differ in exposure and experience (Tuoane, 2011 Personal communication).

- DAOs are answerable to the DFS both administratively and technically. Subject Matter Specialists (SMS) are answerable to DAO administratively and to technical departments. ATOs are also answerable to Area Extension Officers (AEOs) administratively and to SMSs technically (Tuoane, 2011 Personal communication). This is a great challenge to officers who are to implement conflicting activities from their superiors.

- The National Extension and District Extension Working Groups were envisaged to coordinate extension services between public and private sectors at national level and district level (Tuoane, 2011 Personal communication). But presently, any partnership is based on personal relationships; hence the need for policy to formalize the forums.

To date, the extension system in Lesotho focuses mainly on the transfer of knowledge to farmers particularly to improve and enhance crop and livestock production, while globally, extension system is interactive (Table 18). The main focus of extension innovation system is to go beyond knowledge transfer focusing on technology development by incorporating actors in rural agriculture, including the intended farmers. The main constraint associated with traditional linear extension systems is lack of collaboration and coordination.

Table 18 Global innovation system versus extension practices in Lesotho

Global innovative interaction	Practices in Lesotho
Research and extension form one body	Research and extension are two entities
Interactive extension system	Traditional linear extension system /technology transfer
Coordination and collaboration well defined	Coordination and collaboration ill-defined
Organisations complement one another	Duplication and overlapping activities
Policy enables innovation	Policy allocation of resources and organising farmers in groups

<u>**Source**</u>: Author's compilation

In Lesotho as reflected in a table above, research and extension are two entities running parallel to one another resulting in duplication of efforts while in global approaches, research and extension form one body. There is a need to integrate the expertise and knowledge that the farmers have acquired over time in agricultural innovation system to suit the country's conditions. The example is farmers' innovations in farming systems, pests control or food preservation techniques which were not given attention by extension systems. The indigenous technical knowledge need to be identified and incorporated into the innovation system instead of trying to replace it with exotic knowledge. This can form the basis upon which research agendas are developed. The role of policy internationally is to enable innovation system while in Lesotho it is to organise farmers into groups and to allocate resources. In the next section, the proposed framework for innovative extension system is presented.

## 5.5 Proposed framework for innovative extension system in Lesotho

This section aims at developing the best fit model for innovative extension intervention using information from primary and secondary data, and from personal knowledge of the researcher. The framework will assist policy makers in Lesotho to identify processes for agricultural extension service reform and to guide a multi-stakeholders intervention approach.

Innovative culture already exists in Lesotho. Examples are 'Matsema', consortium and forums. 'Letsema' is a traditional type of interaction among farmers which allows them to operate jointly to achieve a common objective. Duration of 'Letsema' ranges from a day to a week. 'Letsema' is an activity which an organizer invites fellow village men or women to provide a helping hand. There is no payment except for food, particularly lunch. Working tools are borrowed or participants bring their own to the event. Usually "Matsema" (plural) are organized for purposes of farm activities such as ploughing, weeding and harvesting. Acquired knowledge and technology are applied. This type of partnership may work for innovative extension systems since it recognizes the potential farmers' interaction. The approach is robust among farmers and the operational principles of this type of partnership can influence the government to meet corporate interest.

As illustrated in Chapter Two, Lesotho's extension framework is dominated by traditional linear extension system and an innovative intervention approach is required. It is not the intension of the proposed framework to create another structure for coordinating extension services as the framework recognises coordination

culture that already exists. The proposed model sets out to convene actors with different experiences to realise a change in extension service delivery. The model seeks synergy among innovative actors by delineating the processes into the following; knowledge assemble, innovative communication and innovative use. The proposed model below can be used as a 'service kit' to overhaul the extension system in Lesotho.

Figure 7: A proposed extension model to promote innovation systems in Lesotho
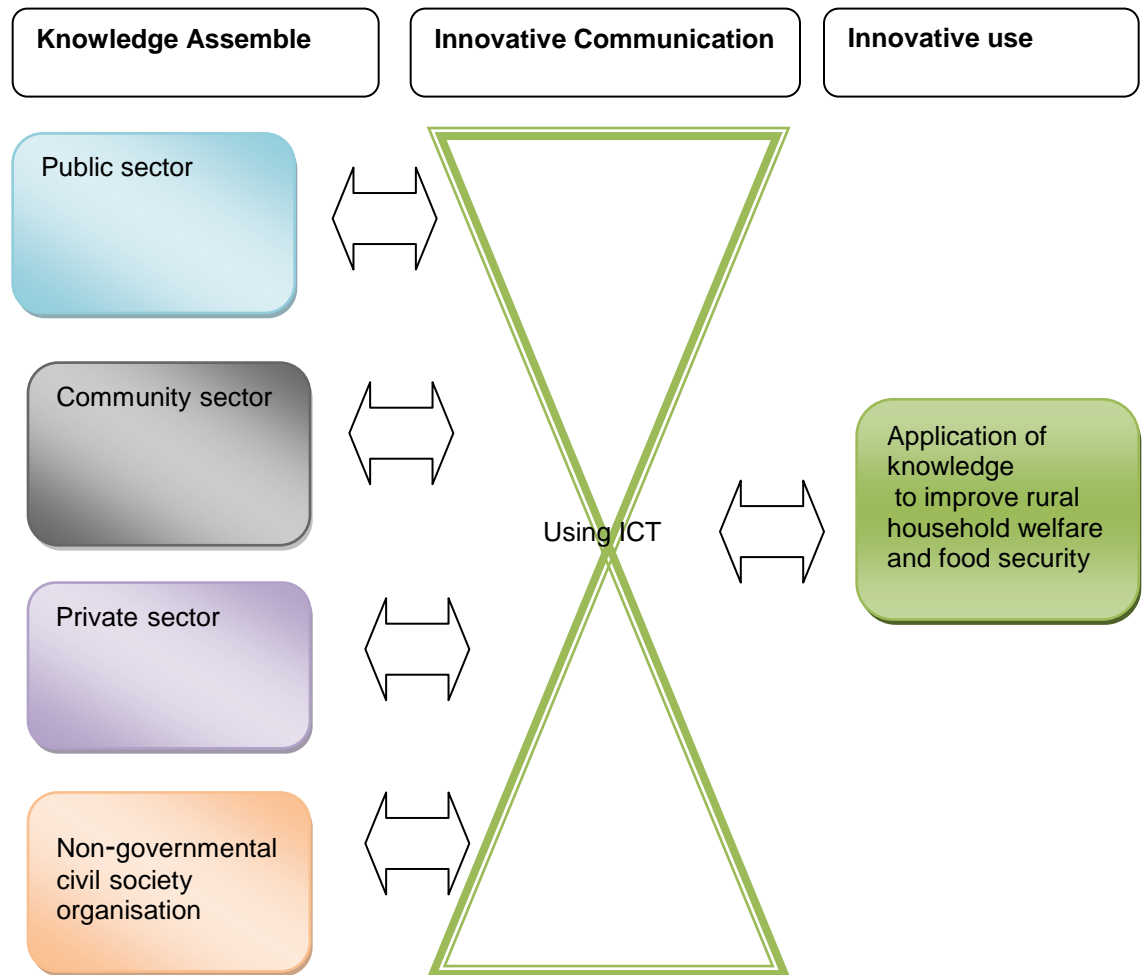
5.5.1 Knowledge Assemble

The purpose of the proposed model is to advance the knowledge acquired and experienced from different sources to fill the gaps in knowledge pluralisation. In a multiple source of innovation as described in Chapter Two, community sector, public sector, private sector and non-governmental civil society organisation form the most important component for knowledge generation and access. The contributions from different sources of knowledge are discussed as follows:

5.5.1.1 Public sector

As shown in Figure 1, all the departments within the MAFS are organised within a top-down organisational structure managed separately from the national to the district level. The model proposes a horizontal collaboration and multi-disciplinary approach. One of the important functions of the public sector in knowledge assemble is to facilitate a platform for actors by developing policies which improves the quality of actors interaction, research and education. The National Extension Working Group and the District Extension Working Group can form a strong arm for conveying knowledge.

5.5.1.2 Community sector

Farmers and their organisations are the primary stakeholders. The proposed model does not only explore farmers' potential to innovate and experiment but also support them to evaluate knowledge for replication and adoption. Local farmers always try to

find solutions for their farming problems. They have a better knowledge of indigenous farming systems which could lead innovations to be better accepted by other farmers (van der Pol, 2005:1).

5.5.1.3 Private sector

The private sector has the knowledge and access to the markets. In the view of Adolph (2011:14), the private sector is a key provider of Information and Communication Technology (ICT) services used for rural agricultural innovation dissemination.

5.5.1.4 Non-governmental civil society organisation

As described by Pant and Odame (2006:67) this sector considers knowledge as public good and different extension sectors complement one another to meet different knowledge needs of farmers to improve extension service delivery. Knowledge is to be attained through a network of farmers, public and private institutions whose interaction results in useful knowledge assemble.

5.5.2 Innovative communication

As illustrated in Table 7 respondents have a low level of education. This means that they heavily depend on the extension worker for technical skills and knowledge as well as up-to-date market information. To access assembled knowledge, innovative communication becomes a vital bridging mechanism. The traditional system of face to face interaction between farmers and extension workers is complemented by the use of Information and

Communication Technology (ICT). ICT is an initiative that has been developed to increase the accessibility of advisory services to improve support and to deliver information to farmers (CTA, 2011:2). ICTs offer the opportunity to improve knowledge flow among knowledge producers, disseminators and users (World Bank 2009a in World Bank 2011b:9). Creativity of extension organisers is essential in extension service delivery and advisory services for use of old and new media to reach the clients in Lesotho where extension ratio is considered optimum at 1:500.

Innovative tools such as Geographic Information System (GIS) and Global Positioning System (GPS) can be utilised to enable access to information such as value chain system approach to the rural remote areas. Similarly, radio and videos can be used regularly for capacity building on innovations and mobilisation of farmers in local language (Sesotho). Cellular phones can be used to allow farmers to participate on radio talk shows. SMS can provide useful marketing information and enable access to information. Use of old method of communication such as education programs, print material, demonstrations, field days and/ or agricultural shows to disseminate knowledge are not replaced in innovative communication but rather complemented.

5.5.3 Innovative use

The aim is to improve rural household welfare through innovative systems. Time is required for a rural household to adopt an innovation which is a process that involves different stages. Rogers (2003:37) specified five stages as innovators, early adopters, early majority, late majority and laggards. Furthermore, Rogers (2003:12) highlighted that the same innovation may be desirable for one

adopter in one situation but undesirable for another potential adopter whose situation differs. In the proposed framework, innovators are also users of knowledge. Besides, Hall *et al.* (2005:2) is of the opinion that innovation is the application of knowledge that has been acquired through learning, research or experience.

The advantage that has been brought forward by Sumberg *et al.* (2003:750) is that potential end-users may have some role in assessing alternative forms of the technologies prior to full specifications. Another advantage of having innovators as users according to Geels (2004:902), is that new technologies have to be 'tamed' to fit in the concrete routines and application contexts of households but in innovative systems, mainly learning and adjustments are involved. Hall *et al.* (2003:223) described innovation system framework as a learning framework. In multiple sources of innovation, actors have the opportunity to learn from one another. For example rural communities in Lesotho have always treated their injured and sick livestock without the help of a veterinary doctor who usually resides in town. A multi-stakeholder intervention approach advances integrating this knowledge to improve household innovativeness.

The proposed model is envisaged to assemble knowledge from different sources to fill the gap that exists in Lesotho's extension system by bringing all stakeholders together to improve extension service delivery. Innovative communication bridges the gap that exists among stakeholders by enabling interaction and collaboration in new ways to enhance innovation processes. In the next section, policy recommendation to reform Lesotho's extension system is made.

5.6 Policy recommendation for Lesotho's extension

The section highlights the necessity for agricultural policies to be in alignment with the needs of small scale farmers. The goal of Food Security Policy in Lesotho is to achieve both the World Food Security Objective and the Millennium Development Goals of reducing the number of people undernourished by half using 1990 as the base year (National Action Plan for Food Security, 2006:1). The Food Security Policy specifies a number of strategies that are to be applied to achieve Food Security objectives. To effectively achieve these objectives, the policy should address changes in innovative communication as it is key for the dissemination of assembled knowledge and enabling environment for multi-stakeholders coordination

The government of Lesotho should put in place policies and programs to foster institutional innovativeness. More emphasis should be on the introduction of policies and administrative support which recognize farmers and communities as generators, monitors and evaluators of innovations, not as passive recipients. Farmers' experiences which are normally out of reach to the 'outsiders' should be integrated in the framework. Policy should promote synergetic relationships among a range of service providers and their clients. This requires a well structural and organisational support to increase quality and quantity of service supply in public and private sectors, paired with investments in the capacity of farmers to demand services (Christoplos, 2011:15).

Policy should also be area specific for area specific solutions. Lesotho is divided into four ecological zones namely, the Highlands, Foothills, Lowlands and Senqu Valley. Clark (2002:355)

puts forward that each zone has its own uniqueness and there is no guarantee that an agricultural technology package that works in a specific location in one year will be equally successful 200 metres down the road in same year, or in the same location in following year.

5.7 Conclusion

It takes different extension approaches and methods by different organisations to achieve different agricultural goals but the findings reveal that there is an unmet demand for extension services and farmers would prefer to receive support from the extension organisations which tally with their farming needs. The results revealed mismatch between famers' requirements and support services offered as reflected by extension officers and households' surveys. Household survey shows that farmers require a combination of technical support, production inputs and access to credit while extension organisations provides only a single support.

A limited coordination and collaboration exists among extension service providers with weak link between extension and farmer organisations. Specifically, the gap exists between research and extension and this is the most important component to address as the developments at research stations do respond to the realities on the ground. Innovative communication can bridge the gap that exists among stakeholders by enabling interaction and collaboration in new ways to enhance innovation processes. Policy should be made to allow changes to happen and be relevant to the farmers production needs.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The study revealed that the areas have a diverse and active wide range of stakeholders involved in the provision and facilitation of rural extension services. The results indicated that extension organisations involved in rural agricultural extension render similar extension services to the same categories of farmers. This was found to have advantages and disadvantages to the farmers that are being served. Although extension organisations have reported to team up and to integrate plans, this type of coordination was found to be for convenience and usually based on friendship relationships, which may not be sufficient and could go sour resulting in coordination and communication breakdown. The study concludes by recommending a framework to strengthen weak coordination relationships among actors and to facilitate innovation system in Lesotho.

6.2 Summary and Conclusion

6.2.1 Overview of how extension framework has evolved over centuries.

A review of literature described the historical development and evolution of agricultural extension service globally. A linear traditional model of technology transfer which dominated the extension service delivery in the twentieth century had evolved into a range of different approaches, for example coordination and

innovation systems. In the past researchers were the major actors in the National Agricultural Research System (NARS). Agricultural Knowledge and Information Systems (AKIS) recognised farmers, research, extension and education. In Agricultural Innovation Systems (AIS) there is a wide spectrum of actors. It is in this light that extension system in Lesotho is proposed to gradually shift from a single-handed effort into innovation system to enable interaction of wide range stakeholders.

6.2.2 Socio-economic profile

The socio-economic characteristics such as age, gender, education and income have an influence on the adoption of agricultural innovation systems in 'Muela and Ha Lejone. In the two areas farming decisions to a large extent are still approved by men rather than women. The results have a positive effect on the adoption of innovation systems as the extension workers directly influence the principal household decision makers. At the same time, data indicates that the same decision makers are within the age that allows them to be innovative and to carry out farming activities but their low level of education has a negative effect on the adoption of innovation systems, including dissemination of extension messages.

6.2.3 Results and Discussions

The study identified several extension organisations involved in Lesotho extension system. The results have revealed mismatch between the requirements of farmers to succeed in farming and the support services offered by extension organisations. The household

survey reflected that farmers require a combination of technical support, production inputs and access to loans, while extension organisations provide only a single activity, not a combination. The study also revealed that different extension organisations offer similar extension services as a result of limited coordination and collaboration. Specifically, the gap exists between research and extension and this is the most important component to address as the developments at research stations do not respond to the realities on the ground. Where convenient, actors either team up to share limited resources or integrate plans. This type of coordination is common among stakeholders and it was found to be insufficient as it is based on friendship, relative or neighbourhood consideratins. A suggestion has been made by extension organisations that the Director of Field Services should take a leading role in facilitating and motivating coordination platforms.

To date, the extension system in Lesotho focuses mainly on the transfer of knowledge to farmers particularly for improving and enhancing crop and livestock production. Although this is a key issue, the aim is to go beyond transfer of knowledge and focus on technology development in collaboration with actors in rural agriculture including the targeted farmers. Innovative communication bridges the gap that exists among stakeholders by enabling interaction and collaboration to enhance innovation processes. Policy should be developed to enable changes to happen and be relevant to the farmers production needs.

6.3 Recommendations

Based on the results of the study, the following recommendations are made to enhance rural agricultural extension innovation system in the study areas:

- **Stakeholders' involvement.** The study results have a positive effect on the adoption of innovation systems as the extension workers have a directly influence to the principal household decision makers. At the same time, data indicated that the same decision makers are within the age that allows them to be innovative and to carry out farming activities. It is recommended that all actors participate to minimise overlapping activities and to match farmer's requirements with the support services. Integrating farmer's findings and their way of farming will inform a framework for better coordination.

- **Qualifications and training of extension staff.** The results showed that most officers have received training in general agriculture at certificate, diploma and degree levels. It is recommended that a good orientation in agricultural extension is provided through in-service trainings to enable extension workers to be able to identify and work with innovative farmers and empower them. The results have shown that extension workers are within the age that they can upgrade their skills and knowledge in agricultural extension. It is recommended that extension officers are encouraged to expand their horizon in agricultural extension to be effective facilitators of innovation systems.

- **Coordination.** The study revealed that coordination among actors is based on personal relationships which could go sour at any point

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in time. There is a need therefore to formalise arrangements for actors to work together. Existing structures within extension system need to be formalised.

- **Farmers' involvement**. Involvement of farmers in extension system is minimal as farmers are seen as the recipient of technology. It is recommended that they are involved as primary stakeholders who have the obligation to meet their immediate food security needs and improve their income.

- **Policy.** A recommendation is made to develop and implement a policy which will foster relationships among knowledge generators, to ensure accessible use and the match between the features of knowledge generated with the features of the potential knowledge users. Policy should advance self-confidence of small scale farmers and provide them with the needed skills to overcome educational barriers that hinder their path to economic liberation.

- **Use of Information and Communication Technology (ICT).** The majority of farming community has to be reached to ensure that farmers gain better access to agricultural information regardless of their educational background. The use of ICT is recommended to complement the traditional face to face communication. ICT offers good opportunity to improve knowledge flow and application among stakeholders.

6.4 Directions for future research

The study has provided an in-depth understanding of poor coordination which is a current problem in rural agricultural

extension service in Lesotho. Additional research is needed on the constraints inhibiting stakeholders' involvement and participation in rural agricultural development.

Future research should also focus on the state of agricultural production and productivity before multi-stakeholders intervention approaches were introduced and compared to when traditional approaches were practiced, in more detail than it was possible in this research. The understanding of multi-stakeholders intervention approach as a vehicle for agricultural development would further be enhanced by focused investigation on selected factors such as compiling innovative farmers and areas of innovativeness for further investigation.

Finally, two critical questions remained unanswered. Firstly, the number of extension workers in an area and their highest qualification in agricultural extension as opposed to the number of households requiring extension services. Secondly, farming efficiency as it is influenced by multi-stakeholder interventions versus the traditional approaches. Answers to these questions will help to move the field of extension services to promote rural agricultural development.

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Appendix A1: Questionnaire- Farmers

Dear respondent

Thank you for your willingness to complete this questionnaire. The purpose of the study is to determine your perception of extension services by different agents. The survey should not take more than 20 minutes to complete. This is a confidential survey and the answers you provide will be used for research only.

Please answer all the questions. The study seeks to find your understanding of service value rendered by extension agents therefore there are no right or wrong answers.

Part 1.0: IDENTIFICATION		
Study areas 1 = 'Muela 2 = Ha Lejone	☐	V1
Village name & number(see codes below) ☐ ☐ ☐ 201 Paballong, 202 Moholeng, 203 St Helena, 204 Boinyatso, 205 Bela-Bela, 206 Taetsi, 207 Muela, 208 Phahleng 402 Ha Nkheo, 403 Thoteng, 404 Moreneng, 405 Ha Lukase, 406 Ha poli, 407 Ponts'eng		V2
Respondent Number ☐		V3
Respondent category (1.Farmer,2 Lead farmer,3 Committee member)	☐	V4
2.0: Demographic Data		

2.1	Marital status (Please select one option)	01 Single, ☐ 02 Widowed ☐ 03 Divorced, ☐ 04 Married ☐ ☐ 05 Separated ☐	V5

2.2	Gender (Please select one option)	01 M 02 F	☐ ☐	V6
2.3	Age (Please select one option)	01 25-30 02 30-35 03 35-40 04 45-50 05 50-55 06 55-60 07 60+	☐ ☐ ☐ ☐ ☐ ☐ ☐	V7
2.4	What level of education did you complete? (Please select one option)	01 Nil, 02 <Std 7 03 Std7 04 J.C 05 C.O.S.C 06Other Specify_____	☐ ☐ ☐ ☐ ☐	V8
2.5	Are you a part time or full time farmer? (Please select one option)	01 Full time 02 Part-time	☐ ☐	V9
2.6	How would you describe your main source of income? (Please select the one with the greatest income)	01 Social grant ☐ 02 Remitance ☐ 03 Formal employment ☐ 04 Sales of agric produce 05Other specify_____		V10
3.0: Source of Information				
3.1	Are you involved in agricultural development activities?	01 Yes 02 No	☐ V11 ☐	
3.2	Which of the following would more appropriate describe your farming system?	01 Single commodity ☐ V12 02 Mixed farming ☐		

	(Please select one option)	03 Multi commodity ☐ 04 Other specify_____	
3.3	Who provides you with technical agricultural support?	01 MAFS 02 MoFLR 03 MoLGCA 04 MTEC 05 Private 06 LHDA 07 NGO		V13a V13b V13c V13d V13e V13f V13g
3.4	What kind of assistance do you get from the organizations?	01 Grants 02 Production inputs 03 Loans 04 Food Aid 05Other specify_____		V14a V14b V14c V14d V14e
3.5.	What kind of support service do you require to succeed in farming? (Please select one option)	01 Technical support ☐ 02 Agric inputs ☐ 03 Loan ☐ 04 1and 2 ☐ 05 1,2 and 3 ☐ 04 Other specify_____		V15
3.6	Number of extension agents in your area		☐	V16
3.7	How would you rate the usefulness of their support services on the scale 1- 5? (Where 1 is not useful and 5 is most useful).	01Not useful 02- 03 – 04 – 05 Most useful		V17
3.8	How do you rate their availability	01 Not available	☐	V18

	on a scale of 1-5? (Where 1 is not available and 5 is always available).	02- 03 – 04 – 05 Always available	
3.9	Different organizations offer extension services in your area, is this an advantage, or not? **(**Select one option**).**	01 Yes 02 N0	V19
3.10	If yes, what are the advantages?		V20
3.11	If no, what are the disadvantages?		V21

<div align="center">

4.0: Participation

</div>

4.1	To what extent do service providers involve you in needs identification on a scale of 1-5? not involved and 5 is extremely involved).	01 Not involved 02 – 03 – 04 – 05 Extremely involved	V22
4.2	To what extent do they utilize your input on a scale of 1-5? (Where 1 is not used and 5 always used).	01 Not used 02 – 03 – 04 – 05 Always used	V23

4.3 Indicate the frequency with which each organization calls meetings in the following table.

Use a check mark (√) for your selection.
Frequency

1   2   3   4   5

Organization	Weekly	Bi-weekly	Monthly	Bi-monthly	Quarterly	V24
MAFS						V24a
MoFLR						V24b
MoLGCA						V24c
MTEC						V24d
Private Sector						V24e
LHDA						V24f
NGOs						V24g

4.4 Which meetings do you often attend?
Frequency

1   2   3   4   5

Organization	Weekly	Bi-weekly	Monthly	Bi-monthly	Quarterly	V25
MAFS						V25a
MoFLR						V25b
MoLGCA						V25c
MTEC						V25d
Private Sector						V25e
LHDA						V25f
NGOs						V25g

4.5. For the organization whose meetings you often attend, what would you say are the reasons for your support?

V26

	V26
	V26a
	V26c
	V26d
	V26e
	V26f
	V26g

THANK YOU

Appendix A2: Questionnaire -Service providers

Dear respondent,

Thank you for your willingness to complete this questionnaire. The purpose of the study is to determine your perception of extension service delivery. The survey will not take more than 20 minutes to complete. This is a confidential survey and the answers you provide will be used for research only.

This questionnaire is designed to find out few things about multi-stakeholder intervention approach. Please answer all the questions carefully there are no right or wrong answers.

<table>
<tr><td colspan="4" align="center">1.0 IDENTIFICATION</td></tr>
<tr><td>Study areas</td><td>1 = 'Muela
2 = Ha Lejone</td><td></td><td>V 1</td></tr>
<tr><td colspan="2">Respondent Number</td><td></td><td>V 2</td></tr>
<tr><td colspan="2">Organization Number(see codes below)

Muela A01GO, A02 NGO, A03 Private,A04 Parastatal

Lejone B01GO, B02 NGO, B03 Private, B04 Parastatal</td><td></td><td>V3</td></tr>
<tr><td colspan="4" align="center">2.0: Demographic Data</td></tr>
<tr><td>2.1</td><td>Marital status

(Please select one option)</td><td>01 Single
02 Widowed
03 Divorced
04 Married
05 Separated</td><td>V4</td></tr>
<tr><td>2.2</td><td>Gender
(Please select one option)</td><td>01 M

02 F</td><td>V5</td></tr>
<tr><td>2.3</td><td>Age

(Please select one option)</td><td>01 25-30

02 30-35
03 35-40</td><td>V6</td></tr>
</table>

		04 40-45 ☐		
		05 45-50 ☐		
		06 50-55 ☐		
		07 55-60 ☐		
		08 60+ ☐		
2.4	What is the highest tertiary qualification you have completed? (Please select one option)	01 Certificate in general Agric ☐ 02 Diploma in Agric Ed ☐ 03 Dip in general Agric ☐ 04 Dip in Forestry and & Resource Conservation ☐ 05 Bachelor of Science Agric, ☐ 06 Masters of Science Agric ☐ 07Other Specify_____	V7
2.5	Please indicate the field of specialization of your highest qualification. (Please select one option)	01 Extension only ☐ 02 Home economics ☐ 03Forestry&resource management ☐ 04 Livestock production ☐ 05 Crop production ☐ 06 Horticulture ☐ 07 General Agric ☐ 08 Other Specify_____	V8
2.6	What is your function in the organization? (Please select one option)	01 AEO ☐ 02 ATO ☐ 03 SMS ☐ 04 AA ☐ 05 Other specify_____	V9
2.7	As an extension agent, please indicate specifically your area	01 Soil and water conservation ☐	V10

		of support to farming communities (Please select one option)	02 Forestry ☐ 03 Range management ☐ 04 Irrigation ☐ 05 Agronomy production ☐ 06 Livestock production ☐ 07 Extension ☐ 08 Horticulture ☐ 09 Integrated Catchment Management ☐ 08 Other pecify_____	
2.8	How many years of experience do you have in extension service delivery?		☐	V11
3.0: Organizational Information				
3.1	How many farming families are there in your area? Please give an estimate.		☐	V12
3.2	What is the type of your organization/extension agency? (Please select one option)	01 Government Organisation(public sector)(GO) ☐ 02.Non-Governmental Organization(NGO) ☐ 03 Private organization ☐ 04 Parastatal ☐ 05 Other Specify_____		V13
3.3	What is the focus of service of your organization (Please select one option)	01 Agric development only ☐ 02 Rural dev(Agric & non-agric) ☐ 03 Non-agriculture Development ☐ 04 Other Specify_____		V14
3.4	Which farming approach is	01 Single commodity		V15

	used by your organization in extension? (Please select one option)	02 Mixed farming ☐ 03 Multi commodity ☐ 04 Other specify _____	
3.5	Which of the following extension approaches is used by your organization?	01 Training and visit ☐ 02 Client demand ☐ 03 Participatory extension ☐ 04 Unified extension ☐ 05 Project approach ☐ 06 Integrated Catchment Management ☐ 07 Other Specify_____	V16
3.6	In your observation, to what extent does your extension approach address the needs of the farmers? (Use scale of 1-5 where 1 is not helpful and 5 is very helpful)	1 Not helpful ☐ 2 ☐ 3 ☐ 4 ☐ 5 Very helpful ☐	V17
3.7	Who is your target audience? (Please select one option)	01 Primary smallholders farmers ☐ 02 Small scale commercial farmers. ☐ 03 Commercial farmers ☐ 04 Youth ☐ 05 Women's club ☐ 06 Both 1&2 ☐ 07 All of the above ☐ 08 Other Specify_____	V18
4.0: Coordination			
4.1	Do you think synchronization by the different role players in rural extension interventions is necessary? (Please select one option please).	01 Yes ☐ 02 No ☐	V19
4.2	If yes, describe how		V20

4.3	Are there other organizations rendering similar extension services to yours? (Please select one option)	01 Yes 02 No		V21
4.4	If yes, which agencies do they represent?	01 NGO 02 G.O 03 Private sector 04 Parastatal 05 Other Specify_____		V22a V22b V22c V22d V22e
4.5	How frequent do your extension activities coincide with that of other organizations? (Use a scale of 1-5 where 1 is never and 5 is all the time/always)	01 Never 02 03 04 05 Always		V23
4.6	Do you think coordination between role players is essential in the delivery of extension services? Indicate the importance using the scale of 1-5 below. (Where 1 is not important and 5 very important)	01 Not important 02 03 04 05 Very important		V24
4.7	How prevalent is the problem of coordination in your area? Please give an assessment. (select the most appropriate where 1 is not prevalent and 5 very prevalent)	01 Not prevalent 02 03 04 05 Very prevalent		V25
4.8	What remedial measures would you suggest to minimize the problem of coordination?			V26

4.9	Assuming one of the organizations has similar goals and objectives to those of your organisation. Which of the following options would you recommend?	01 Work independently and competitively ☐ 02 Work independently and not competitively ☐ 03. Work independently ☐ but informally agree on different working areas to minimize duplication of efforts. 04 Work informally ☐ together complementing one another. 05 Agree to work ☐ together on separate projects 06 Work together on all ☐ projects bearing the same load. 07 Other Specify_____	V27
4.10	If you recommend working together which objectives would you work to achieve jointly? (Please select one option)	01 Community ☐ 02 Organizational ☐	V28
4.11	Whom do you think should take the lead in coordinating extension service providers?	01 Department of field Services(extension) ☐ 02 Private sector ☐ 03 Farmers organizations ☐ 04 NGOs ☐ 05 Parastatal 06 Other specify_____	V29a V29b V29c V29d V29e V29f
4.12	Have you received any complaint from the beneficiaries related to duplication of agric development activities? (Please select one option)	01 Yes ☐ 02 No ☐	V30

4.13	If yes, how did you address the matter?		V31
4.14	To what extent do you incorporate farmer's indigenous technical knowledge in your agric development plans? (Please use scale of 1-5 where 1 not at all and 5 always)	01 Not at all ☐ 02 ☐ 03 ☐ 04 ☐ 05 Always ☐	V32
4.15	Is there any complementarity between you and other organizations? (Please select one option)	01 Yes ☐ 02 No ☐	V33
4.16	If yes, how so?		V34
4.17	If no, how so?		V35

THANK YOU

Appendix B: Focus Group Discussion-Farmers

Focus Group Discussion Objective:

To determine the extent of multi-stakeholder coordination and the approaches used in rural agricultural development.

Objective 1: To establish who these organizations are and what activities are they involved in regarding rural agricultural development.

Name all the organizations that are involved in rural extension services and identify those that are doing similar projects. What do they do?

Objective 2: To describe the perceived benefits of having several organizations in rural development.

Having had an opportunity to be served by different organizations, what are advantages?

Do you have any comments about different organizations rendering similar services?

What could have or should have been done differently and why?

How have (each of) you been involved personally or as a household with different organizations? What are the benefits?

Has working with different organizations changed your perception? How?

Objective 3: to define the constraints regarding rural multi-stakeholder intervention approach

What are the challenges of having more than one organization in one area?

What would you suggest to enhance coordination among organizations?

What other suggestions do you want to make to ensure sustainability?

Appendix C: List of acronyms and abbreviations

Abbreviation	Meaning
AKIS/RD	Agricultural Knowledge and Information System for Rural Development
AIS	Agricultural Innovation System
AEO	Area Extension Office
ATO	Area Technical Office
CBO	Community Based Organisation
DAO	District Agricultural Office
DAPO	District Animal Production Office
DAR	Director of Agricultural Research
DCPO	District Crops Production Office
DEO	District Extension Officer
DFS	Department of Field Services
DHR	Director of Human Resource
DHO	District Horticultural Office
DIO	District Irrigation Office
DLS	Director of Livestock
DNO	District Nutrition Office
DOC	Director of Crops
DPPA	Department of Planning and Policy Analysis
DVO	District Veterinary Office
EAA	Extension Agricultural Assistance
FAO	Food and Agricultural Organisation
FSR&D	Farming System Research & Development
GIS	Geographic Information System
GPS	Global Positioning System
ICM	Integrated Catchment Management
ICT	Information and Communication Technology
LAC	Lesotho Agricultural College
LHDA	Lesotho Highlands Development Authority
LHWP	Lesotho Highland Water Project
MAFS	Ministry of Agriculture and Food Security

MoFLR	Ministry of Forestry and Land Reclamation
MoLGCA	Ministry of Local Government and Chieftainship affairs
MTEC	Ministry of Tourism, Environment and Culture
NARI	National Agricultural Research Institute
NARS	National Agricultural Research System
NGO	Non-Governmental Organisation
SMEC	Snowy Mountain Engineering Company
SMS	Subject Matter Specialist