FEASIBILITY OF SCALING UP LOCAL LEVEL RURAL INSTITUTIONS FOR SUSTAINABLE LAND MANAGEMENT: THE CASE OF LUSHOTO DISTRICT, TANZANIA.

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ABSTRACT

This study on local institutions was carried out in Lushoto District where several land management interventions took place. The interest of the study has been prompted by the recognition that local institutions are viewed as instrumental actors to farmers' development but they face a number of problems which hinder them in performing their roles and responsibilities. Therefore it was necessary to have a systematic understanding of the roles of local institutions and how they can be scaled up to increase their impact. The study aimed to investigate the feasibility for scaling up local level rural institutions for sustainable land management in Lushoto District. It intended to explore three major objectives: To identify and characterize local institutions involved in agriculture or natural resource management that; to assess roles and capacity of local institutions in sustainable land management. Data were collected using a structured questionnaires with open ended and closed ended questions, research guide and interview checklist. A representative sample of 60 respondents from different farmers' groups and 5 key informants were drawn and interviewed. The Statistical Package for Social Science Software (SPSS) was employed for data analysis. From the findings it was observed that farmers' groups or local institutions play a great role on management of natural resources and increase production through the use of different land management technologies. It was also observed that farmers' groups have different roles that they perform in order to ensure the sustainability of their activities such as supporting training to the farmers, formulation of capital accumulation systems such as SACCOS etc. Different ways of scaling up these local institutions were recommended during the study by the farmers themselves, one of them being providing working equipment to farmers.

DECLARATION

I, Regina John, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is the result of my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted for a degree award in any other institution.

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(Supervisor)

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DEDICATION

This study is dedicated to Jesus Christ our saviour and to ICRAF organisation for their great role that they perform towards natural resources management in our beloved country Tanzania.

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LIST OF ABBREVIATIONS AND SYMBOLS

AHI	African Highland Initiative
CDC	Community Development Cooperation
DALDO	District Agriculture and Livestock Development Officer
FAO	Food and Agriculture Organisation
FGD	Focus Groups Discussion
FOS	Friends of Usambara
GTZ	Gesellschaft fur Technische Zusammenarbeit
ICIPE	International Centre for insect Physiology and Ecology
ICRAF	International Centre For Research in Agro -Forestry
IIED	International Institute for Environment and Development
INRM	Integrated Natural Resource Management
LDIF	Lushoto District Investment Profile
LLI	Local Level Institutions
MDG	Millennium Development Goals
MVIWATA	*Mtandao Wa Vikundi Vya Wakulima Tanzania*
NGO	Non Governmental Organisation
NRM	Natural Resource Management
	Organisation
PSP	Population Strategy Programme
SACCOS	Savings and Credit Cooperative Society
SECAP	Soil Erosion Control and Agro-forestry Project
SLM	Sustainable Land Management
SPSS	Statistical Package for the Social Sciences

SUA	Sokoine University of Agriculture
TAFORI	Tanzania Forest Research Institute
TIPDO	Traditional Irrigation Programme Development Organisation
TZS	Tanzania Shillings
UNDP	United Nations Development Programme
UNESCO	United Nations Educational Scientific and Cultural Organisation
UPE	Universal Primary Education
URT	United Republic of Tanzania
VEO	Village Executive Officer
WEO	Ward Executive Officer

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Land has become one of the main resources that people in rural areas depend on as the major means to overcome poverty. About 80% of the country's poor people live in rural areas and rely on agriculture as their main source of income and livelihood (URT, 2001). This makes the rural economies a product of the use of land and natural resources, especially when 92% of Tanzanians rely on fuel wood from trees and other vegetation for their domestic energy supplies (Malimbwi *et al,* 2002). New strategies and practices which ensure sustainable use and conservation of natural resources must become central elements of any successful national poverty reduction efforts. However several questions arise with respect to how rural people can be involved in the strategies of proper management of natural resources. such questions include: Are economic opportunities for rural communities being created by current national policies in a way that is improving the livelihoods of these people which may reduce their dependence on land? Are such rural opportunities a sufficient component of existing poverty reduction strategies, both in policy and in practice? Are natural resources being effectively and sustainably managed so that they can ensure the security of rural livelihoods and provide for new economy based on Tanzania's extraordinary biological wealth?

Local people are more knowledgeable about local conditions and interrelationships as they have place-based experiential knowledge. This means that scientists and

technical managers need to spend more time working with and looking close to the insights of local initiatives. The empowerment of local communities to assist in the management of the natural resources can easily be attained through recognition of their local institutions existing in the area. Local institutions are systems of rules, decision making procedures and programs which give rise to social practices, assign roles to the participants in these procedures and guide interactions among the occupants of the relevant roles (Chambers 1983; Bosch *et al*, 1996).

For proper management of resources, well organized and capacitated local institutions should exist in the community since the processes of management of land and other natural resources will be taken care by the local institutions and there will be divergent ideas which will be brought together, discussed in a representative way by bringing people of all levels including the poor, marginalized and women on board. In the context of this study, local institutions are defined as groups of people or farmers undertaking agricultural and or related activities/practices with the aim of increasing income and improving the management of land.

The African Highlands Initiative (AHI) was established as an eco-regional program focusing on the issues of natural resource management (NRM) in the highlands of East and Central Africa. AHI operates in eight selected benchmark locations (sites) in five countries (Kenya, Uganda, Tanzania, Ethiopia and Madagascar). AHI's guiding philosophy is a client driven approach using participatory methods and an effective research development continuum where research partners use collaborative action for the design and dissemination of appropriate integrated technologies and

methods for improving NRM in diverse and complex situations (Opondo, 2006). When AHI began operating in Lushoto District Tanzania, its activities were directed towards pilot villages including Kwalei with a focus on technology dissemination. Many farmers in Kwalei, they kept asking for financial assistance so as to invest in the technologies. During an in-depth participatory diagnostic study, lack of financial resources was found to have a negative effect on the adoption of NRM technologies (AHI, 2011).

A study by Tenge (2005) in the village of Kwalei as cited by AHI (2011) also confirmed the earlier observation that investment in NRM technologies was essentially a socio-economic decision and had to be supported by financial returns. According to Tenge the cost associated with adopting most of the NRM technologies was beyond the reach of many farmers especially when it come to the soil conservation technologies (AHI, 2011). With the assistance of AHI, farmers were advised to form a Savings and Credit Cooperative Society (SACCOS) to build financial capital to address this problem as a result, and this enabled farmers to have financial resources which helped them to adopt NRM technologies. SACCOS were formed in four villages of Mbelei, Kwadoe, Kwekitui and Kwehangala (AHI, 2011). Other local institutions that were formed under AHI include Farmers Working Groups (Collective Action Groups), Catchments or Watershed Management Committees and Water Users Associations.

1.2 Statement of the Problem

Human impacts on deforestation, soil erosion, overgrazing and degradation of water sources and loss of biodiversity have all resulted into land degradation in many rural areas (Amede *et al.*, 2006). Poor agricultural practices such as shifting cultivation, lack of crop rotation practices, lack of agricultural technology and land husbandry techniques exacerbate the problem.

The main cause of these problems is the lack of good capacitated local institutions which could perform information gathering and dissemination, resource mobilization and allocation, skills development and capacity building, providing leadership and networking with other decision makers and institutions (Agrawal *et al.*, 2009). Since the 1990s a number of local institutions have been formed in Lushoto District these include Malindi farmers group, Ubiri farmers group and Shashui farmers group for environmental conservation activities such as establishment of indigenous tree nurseries for planting in the conservation farm lands (Nyambo *et al.*, 2006).

For local institutions to play an effective role in the NRM they need to be strengthened in terms of their scale of operation, size, geographical coverage and political coverage. It is important therefore to determine their sustainability, effectiveness, their strengths and weaknesses so that an entry point for scaling up would be feasible. Where groups already exist, capacity building can be more successful than forming a new group to which members are less likely to be committed. Similarly, rural people are less likely to resist adoption of an innovation when the new technique is based upon a concept or procedure they are already

familiar with or are currently using. This study therefore intended to determine the feasibility for scaling up the existing local institutions in the study area

1.3 Justification of the Study

Local institutions are important players in the development process, many of them have been successful to the extent possible, but have not yet reached the level where they have the capacity to fulfil their objectives and goals.

So this study aimed to find out the possibilities of scaling up sustainable practices of these local institutions so as to increase their impact on land management in the District and beyond.

The study has resulted in an increase in knowledge to the researcher on how local institutions can be used in different activities related to NRM. The study has revealed the importance of working with local institutions as far as the knowledge of the local people is concerned and what local institutions are capable of, in doing things which concern their own development.

The research has established a base where research organizations such as ICRAF can start in scaling up local rural institutions for sustainable land management. Different ways of scaling up of local institutions will be feasible which will enable them to achieve their objectives since the scaling up will enable them to develop their potentials for self management in their different activities on land management.

1.4 Objectives of the Study

1.4.1 General objective

The general objective of the study was to assess the feasibility of scaling up local level rural institutions for sustainable land management in Lushoto District, Tanzania.

1.4.2 Specific objectives

The study's specific objectives were;

i. To identify and characterize local institutions involved in agriculture and/or natural resource management;
ii. To assess roles and capacity of the local institutions in sustainable land management;
iii. To identify the achievements and challenges of local institutions on land management, and
iv. To determine the factors that influence scaling up of the local institutions.

1.5 Research questions

i. What type of local institutions are dealing with land management or NRM in Lushoto District?
ii. What roles do they play, and what capacity do they have in promoting sustainable land management/NRM?
iii. What are the achievements, as well as challenges they face in performing their roles in promoting sustainable land management?

iv. What are the factors that can be of influence in strengthening the capacity of the local institutions?

1.6 Conceptual Framework

Practices of local institutions can only be considered for scaling up if they are feasible in a specific area; otherwise, there is no point for scaling up. Scaling up in the context of the present study means that the good practices in terms of income improvement, local institutions capacity, roles they perform, resource mobilization and sustainable land management are disseminated to wider areas beyond the spatial limits they are currently confined to. The literature review shows that the local institutions in Lushoto District have been working in different villages of the District in trying to ensure sustainable land management and natural resource management and to a certain degree have been successful that they can now be scaled up to increase its impact of local institutions in the District and beyond with respect to sustainable natural resource management. Different factors of local institutions in agriculture provide feasible opportunities for scaling up these local institutions (Mzoo, 2002).

Local institutions (farmers organizations/support groups), may have various aims that bring together individuals who form these institutions. Such aims may include generation of income and sustainable land management wherein the individual efforts have become less effective to attain improved life and natural resource management. The literature review shows that local institutions are the organizations of people in rural areas who aim at shaping the livelihoods impact of different

hazards through a range of indispensable functions they perform in rural context that is information gathering and dissemination (Agrawal *et al.*, 2009).

These institutions undertake various roles such as ensuring training to the members, dissemination of information, and improved technologies that are related to land management (Kingma and Aarnink, 1991). Such roles may have both positive and negative implications on sustainable land management. The good/positive practices have potential for enhancing sustainable land management in the wider area. However, these local institutions do not operate in a vacuum: their services often are increasing in scope and scale (Akor, 1990). They always, and to various degrees, interact and affect in different ways the surrounding contexts, which in one way or another impinge on the likelihood of the practices to reach other areas beyond their current territory.

Scaling-up is a multi-stakeholder process consisting of five components including: framing the context, promoting participation, fostering learning, strengthening institutions, and disseminating successful experience (Simon, 2006). Scaling-up local innovations in natural resource management (NRM) involves learning that is centred on three themes: promoting local-level innovation, understanding why local innovations work in specific contexts, and reflecting on their relevance in other geographical and social contexts.

Uvin and Miller (1996) pointed out types of scaling-up as Quantitative scaling-up which deals with the increase in the number of people involved through replication

of activities, interventions and experience, Functional scaling-up where projects and programmes expand the types of activities, Political scaling-up where projects and programmes go beyond service delivery and towards change of structural institutions and Organizational scaling-up which improves the efficiency and effectiveness of the organisations to allow for growth and sustainability of the interventions achieved through increased financial resources, staff training and networking as shown in (Fig. 1).

Understanding how presently the local institutions operate and the way the surrounding environment impinges on the potential for wider spatial adoption of their good practices is imperative for sustainable land management. From such an understanding it becomes feasible to recommend different ways and approaches for sustainable scaling up of appropriate/good practices of local institutions for sustainable land management.

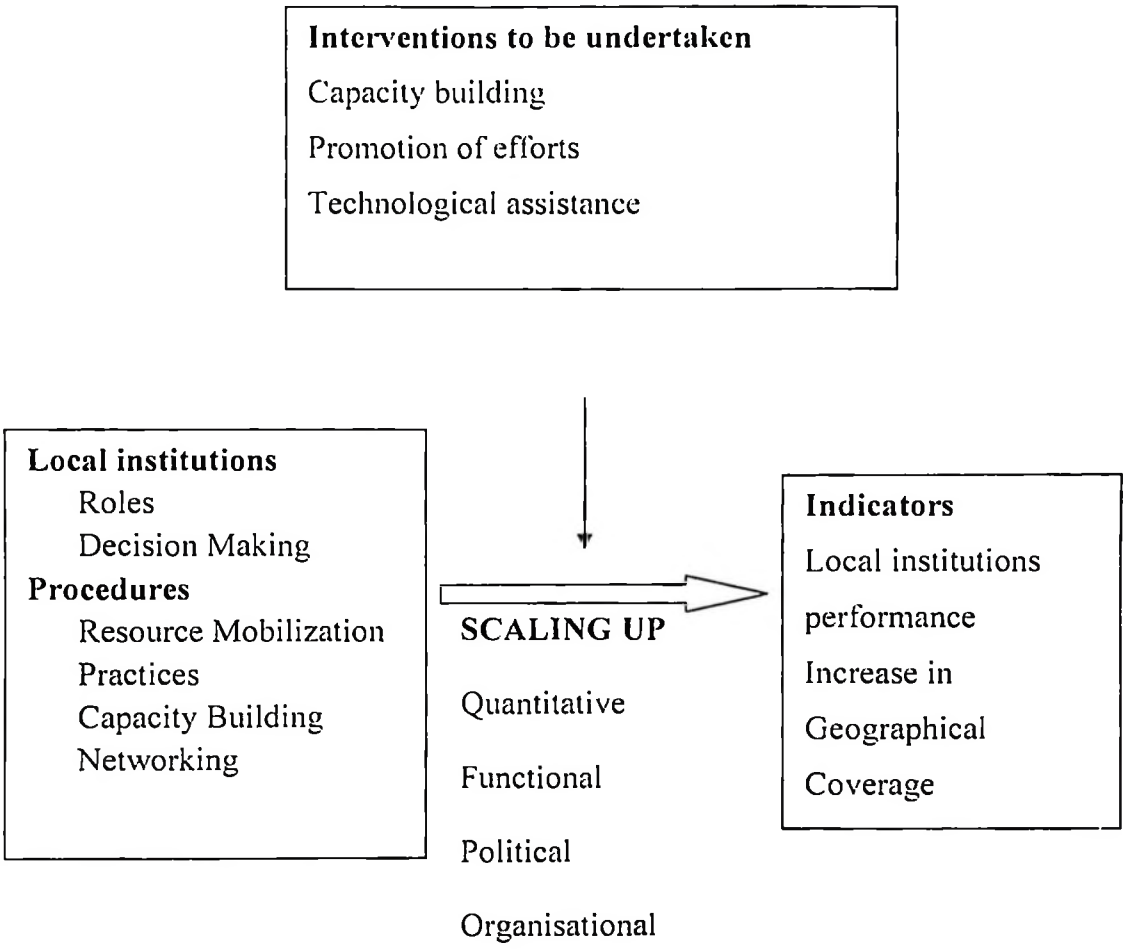

Figure 1: Conceptual framework

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 General Understanding of Institutions

There are many types of institutions, some of which are also organizations (like banks, local governments, or courts) and others which are not (like money, taxation, or the law). An institution is a complex of norms and behaviors that persists over time by serving some socially valued purpose, while an organization is a structure of recognized and accepted roles. Institutions can be organizations, and vice versa. Marriage, for example, is an institution that is not an organisation, while a particular family is an organisation (with roles) but not an institution (with longevity and legitimacy). We will be concerned here with institutions that have an organizational basis (IIED, 2001).

In simple terms, institutions are organizations - often formal - with clear structure and purposes and with defined roles for individuals within them. Organizations might be political (political parties), economic (firms and businesses) and social (churches and schools). At the community level these could be Village Councils, Residents Committees, Farmer Associations, women's groups, clubs and societies (Goldman, 2006).

Local institutions are the organizations of people in rural areas who aimed at shaping the livelihood impacts of different hazards through a range of indispensable functions they perform in the rural context, that is, information gathering and dissemination,

resource mobilization and allocation, skills development and capacity building, providing leadership and networking with other decision makers and institutions (Agrawal *et al.*, 2009).

Contextually, local level institutions (LLIs) surround and connect communities. As institutions they (or the people active within them) establish the rules within specific geographical and cultural spaces, and interact with other institutional systems, such as local government. In some instances, LLIs expand their institutional connections to key groups at the national level and beyond (Karim *et al.*, 2001). Because LLIs create the rules by which organizations operate and interact, LLIs become over time, the repository of indigenous knowledge systems and the foundation by which local society organizes itself. These rules are continually and dynamically updated, sometimes in diverse and contested ways. Local level institutions incorporate many different kinds of indigenous organizations and functions (Karim *et al.*, 2001). These include: village level governance; accepted methods of community resource mobilization; social and mutual aid societies; security arrangements; asset management; conflict resolution councils; management committees for infrastructure and sector services; conflict and legal adjudication committees; livestock and agricultural production cooperatives; tontines and savings federations; religious associations; music societies; and lineage organizations, among others (Karim *et al.*, 2001).

2.2 Local Institutions and Resource Mobilization within Local Institutions in Lushoto District

In 1998, farmers of Kwalei village identified low livestock productivity and land degradation as major challenges. They also identified limited financial capital as one of the barriers to adopting promising technologies, and therefore requested financial assistance to enable them to test and adopt the improved technologies. Limited availability of capital had impaired the adoption of technologies owing to the ever-increasing cost of farm inputs. In response, farmers were sensitized on establishing their own savings and credit cooperative society (SACCOS). Although the farmers were sceptical about the success of such an initiative owing to negative past experiences with cooperatives, they formed a SACCOS in 2000 after undergoing formal training, exchange visits to successful SACCOS, and carrying out group negotiations. They were able to officially register their society in 2002 under the name Kwalei SACCOS through support from the District Cooperative Department. Over the next five years, membership grew from a village association with 36 members to a membership of 182 involving farmers from six neighbouring villages, with a credit-worthiness of TZS 120 000 000 (US$ 100 000) (Mzoo, 2002).

Based on local records, farmers have borrowed money from the SACCOS to purchase agricultural inputs as well as to address other pressing family matters The majority of borrowers are women, choosing to invest their money in establishing businesses and to cover family emergencies. Many of those going into business have begun marketing agricultural produce in distant markets and bringing back merchandise such as clothes and farm inputs. Fifteen percent of the loans have been

used to purchase farm inputs such as fertilizer, improved seeds, and pesticides which are normally expensive to the average farmer. About five percent of the loans have been used to construct soil and water conservation structures and establish tree nurseries; the majority of those investing in nurseries doing so to produce seedlings for sale (Mowo *et al.*, 2002).

2.3 Local Institutions and Networking in Tanzania

Mtandao wa vikundi vya wakulima Tanzania (MVIWATA) which is the National Network for Small-Scale Farmers Groups in Tanzania was founded in 1993, by 22 innovative farmers from Dodoma, Iringa, Kilimanjaro, Mbeya, Morogoro, Tanga and Rukwa Regions for the purpose of creating a farmer-to-farmer exchange forum as a means of enhancing communication among smallholder farmers. Sokoine University of Agriculture (SUA) through its Strengthening Communication Project (SUA-SCOM) guided the initial process in the formation of MVIWATA (MVIWATA, 2007).

It was registered in 1995 under the Society Ordinance (Registration number SO 8612). In 2000, MVIWATA was registered as a Trust Fund under the Trustees Act of 1956. Following the introduction of the Non-governmental Organisations Act of 2002, MVIWATA received a compliance certificate in 2007. Under this Act, MVIWATA is a non-profit private organisation.

Researchers had learned the importance of structured, ongoing dialogue with farmers to identify priority problems, suggest and try out possible solutions, and disseminate

technologies and information judged by both researchers and the farmer groups as useful. They distilled the following five principles from their experience (Mattee and Lessalle, 1994):

i. Multidisciplinarily, in recognition that farmers' problems are multifaceted;

ii. The use of group approach, in recognition that decision making is almost always built on group consensus;

iii. On-farm development of technical innovations to ensure relevance;

iv. Assistance with removal of critical production bottlenecks; and

v. Empowerment of farmers through training and networking.

The MVIWATA groups are very diverse. In Lushoto District, each group member has his or her own farm plot, but they are trained as a group in crop production and farm management. The group also acts as the guarantor to enable members gain access to credit. Groups in a particular region form their own communication links to develop their own independent activities and build social solidarity, for example by composing songs about their activities and the network and passing these around local trading routes, or by holding farmer workshops on issues such as the new cooperative (Mattee and Lessalle, 1994).

2.4 Local Institutions Capacity Building

Local institutional capacities are weak in enforcing control mechanisms to check the overuse of resources, which tends to open access conditions. The issues of land tenure and village empowerment are not only institutional, but also political in nature. Government institutions should provide and motivate for an enabling

environment, including acknowledgement of traditional knowledge, well-defined property rights and operational village by-laws. In order to ensure equity and sustainable development of natural resources, the paradigm shift in management is important whereby communal goods are to be managed for the benefit of the local society (Mowo *et al.*, 2006).

There is a general agreement in the agricultural research and development community in the region that low agricultural productivity and resource degradation in Africa are not due to the absence of technologies, but to the limited adoption, adaptation, and dissemination capacity of farmers and the ineffectiveness of methodologies employed to support these processes. Farmer experimentation and innovation are recognized as essential in efforts to improve productivity and reverse natural resource degradation. This innovation is not only technological in orientation, but may also encompass networking and communication, the strengthening of local institutions planning and monitoring, or accessing resources and marketing (Assefa and Fenta, 2006).

2.5 Types of local institutions

The types of institutions depend on their hypothesized role in the community, among them are listed below:

i. Community-based organizations and social service organizations

Community-based organizations and social service organizations that have a recognized role as assisting the community include shelter and counselling services, neighbourhood/tenant associations, community councils, Boys and Girls Clubs,

crime prevention programs, neighbourhood watches, local civic groups, local political organizations, community development corporations (CDCs) and other non-profit community-based organizations. All local social service programs (not run by the government) that provide human development services like job training programs, literacy, and mentoring programs are included (Stanback, 1981).

ii. Churches and other religious institutions

This category represents places of worship. Faith-based social service organizations, such as Ministries or day care centres associated with a religious institution (Moore, 2004).

iii. Pro-social places/institutions

This category of organizations represents schools, libraries, parks, and recreation centres.

iv. Businesses

According to Bingham and Zhang (2001) and Stanback, (1981) as quoted by Moore (2004), this category includes all businesses that provide a residential local service to residents. These organizations can be referred to as residential services (Moore, 2004).

2.6 Major Roles of Local Institutions

Local institutions continue to play a leading role in ensuring that farmers and women on the farm receive training, information, and improved technologies. Their services often are increasing in scope and scale, either as complementary support to government efforts or to fill the gaps created as government expenditures and capabilities decline. An important emphasis which recently has been highlighted in

local institutions programmes is their support for membership-based community and farmer organizations (Kingma,1991) to develop farmer-to-farmer extension and training networks and to form partnerships with agricultural researchers and development agencies (Akor,1990).

2.6.1 Benefits sharing role

Community involvement in natural resource management and conservation has often been encouraged. The availability of both tangible and intangible benefits to the local institutions contributes to the cohesiveness of the members. The benefits ensure the sustainability of the groups and therefore the principle of benefit sharing needs to be strengthened and stressed in all local institutions. Further, it is evident that most institutions had been formed with the hope that they would in future reap real benefits (Japhen, 2003).

2.6.2 Capacity building role

Most local institutions have people who have worked in forestry, agriculture and other natural resource sectors. These members have technical knowledge on management of the natural resources and can guide other members in carrying out natural resource management activities. There is a vast potential in the indigenous knowledge of members of local communities since they have lived in the locality for a long period of time. This knowledge needs to be tapped as a way of enhancing the sustainability of the natural resources. Local institutions that are heterogeneous-bringing together members of different social and economic positions and influence,

often with outside assistance, can be effective means for the poor to achieve some social mobility (Marsh, 2002).

To complement local knowledge of resources, local institutions will need training in the modern tools of resource mapping, planning and sustainable management, for understanding how to identify and market both traditional commodities and environmental services, and in financial management, among other skills. There is also the more difficult challenge of working with traditional institutions biased against certain groups to become more inclusive and democratic in terms of "who benefits" and "who makes decisions" (FAO, 2001).

2.6.3 Conflict resolution role

The use and management of natural resources in brittle ecosystems is susceptible to multiple forms of conflicts. This arises due to the fragile ecological and social space characterized by the utilization of natural resources for multiple purposes by multiple users which invoke complex and unequal relationships among a wide variety of social actors and stakeholders. Conflicts lead to deforestation, degradation and displacement of people depriving many of their assets and livelihoods. Measures to reduce conflicts suffer in the wake of lack of clear policy guidelines and weak institutional setups to enforce social order. Social capital which is better achieved through local institutions is a potential least-cost means of addressing rural poverty which can be sustained at reasonable costs in a community (Japhen, 2003).

2.6.4 Management role

Communities throughout the world are increasingly involved in the management of local natural resources and the environment. This trend towards participatory decision-making introduces challenges and opportunities for foresters. This is a role that the development agencies have often assumed cannot be done by the communities. However, for sustainable management of resources to be realized, the involvement of communities and more specifically in local institutions must be considered (Japhen, 2003). They can be highly efficient in ensuring that rules are kept with regard to natural resource management (NRM).

2.7 Natural Resource Management Initiatives in Lushoto District

In order to have a sustainable environment, understanding and using appropriate management strategies is important. In terms of understanding, emphasis on some important points of land management is required: Comprehending the processes of nature including ecosystem, water, soils, using appropriate and adapting management systems to local situations, cooperation between scientists who have knowledge and resources and local people who have knowledge and skills.

A study by Dale (2000) has shown that there are five fundamental and helpful ecological principles for the land manager and people who need them. The ecological principles relate to time, place, species, disturbance and the landscape which interact in many ways. It is suggested that land managers could follow these guidelines:

i. Examine impacts of local decisions in a regional context;

ii. Plan for long-term change and unexpected events;

iii. Preserve rare landscape elements and associated species;

iv. Avoid land uses that delete natural resources;

v. Retain large contiguous or connected areas that contain critical habitats;

vi. Minimize the introduction and spread of non-native species;

vii. Avoid or compensate for the effects of development on ecological processes; and

viii. Implement land-use and land-management practices that are compatible with the natural potential of the area (Dale, 2000).

Past efforts in the management of natural resources in the West Usambara Mountains have not been successful, mainly because the approaches were top down and did not consider local communities important in natural resource management. Current initiatives in the area have shown that participatory approaches involving all stakeholders as well as empowering local communities to take charge of natural resource management have more chances of success (Lyamchai, 1998). Different biophysical, socio-economic, institutional and policy opportunities exist that can be exploited to attain sustainable natural resources management in the area. Scaling up of experiences obtained so far, exploiting indigenous knowledge on conservation, improvement in the information flow and market infrastructure and establishment of appropriate policies and bylaws on natural resource management are some of the strategies for the way forward in attaining sustainable natural resource management in the West Usambara Mountains. Land degradation is common in the west Usambara Mountains. This is attributed to poor land husbandry, increased erosion and decline in soil fertility and/or limited use of fertilizers. The impact of this is

declining crop yields, increased food insecurity and reliance on food aid, poor nutrition and increased dependence on forest resource for livelihood (Johansson, 2001).

Three major projects and various research institutions particularly Tanzania Forest Research Institute (TAFORI) which aimed at generating sustainable methods for forest conservation and develop appropriate agro-forestry technologies, and others like Sokoine University of Agriculture have been active in natural resource management in Lushoto District/ West Usambara. Contributions of Soil Erosion Control and Agro forestry Project (SECAP), Traditional Irrigation and Environmental Development Organization (TIPDO) and African Highland Initiative (AHI) are as follows (Mowo *et al.*, 2002).

2.7.1 SECAP in Lushoto District

The project was established in 1981 with Germany funding through the GTZ. The main objective was to improve the economic situation of peasant farmers by increasing agricultural and wood production, availability of water and to restore the disturbed ecological balance of the West Usambara. It is one of the projects dealing with ecosystem conservation and management. Many of its activities such as tree planting on hilltops and on farmlands and forest management have contributed to solving the problem of fuel wood shortage and loss of biodiversity (Mgoo and Nsolomo, 2000).

The project adopted the catchment approach. According to SECAP the catchment is a smaller part of the village (a hamlet) with not more than 100 hectares and up to 80 households. The approach involves six steps namely selection of areas to work, participatory planning, awareness creation and training, soil and water conservation measures, soil fertility improvement and monitoring and evaluation. The technical package include soil and water conservation, raising and distributing tree seedlings, tree planting on hilltops and farmlands development of village forest management plans, introduction of improved breeds of livestock, horticultural production and training (mostly farmers and project extension staff). Activities are carried by a multidisciplinary team of extension staff guided by a steering committee from relevant government institutions and NGOs operating in Lushoto District, individual farmers and target groups (Huwe, 1988).

Within a period of 20 years (1981-2000) about 24% of the households in the West Usambara Mountains have been trained on various aspects (Johansson, 2001). The major thrust was on training on enhancing soil and water conservation measures (73%). About 10 000 000 trees have been planted on farmlands, which is about 20% of the required number of trees to meet the growing demand for fuel wood and reduce harvesting pressure on existing natural forests. As the major agro forestry practice SECAP started with the macro contour strip for soil and water conservation consisting of upper-storey trees, shrubs and fodder grass. However, the macro contour strips were not popular with the farmers because the components were competitive to agricultural crops, harboured rodent pests to crops and they were believed to be potential carriers of plague (Martin, 2000).

2.7.2 Tanzania Forest Research Institute (TAFORI)

The Tanzania Forest Research Institute was established in 1981. The institute has seven centres distributed over four forest ecozones. The principal role of TAFORI is to generate sustainable methods for conservation of natural forests, develop appropriate agro forestry technologies for smallholder farmers and establish databases on natural forests, agro-forestry, and bio-diversity and disseminate the same to various interested endusers. The Institute puts emphasis on demand–driven research, working in multi-disciplinary teams, networking and involvement of all stakeholders in generating technologies.

The Silviculture Research Centre in Lushoto caters for the highlands zone in North Eastern Tanzania. Under agro-forestry research a range of highly preferred tree species have been identified in all agro-ecological zones of the West Usambara Mountains (Mwihomeke, 1995). The famous Lushoto arboretum with over 100 different tree species established since 1952 has also provided a reference for selecting promising tree species for agro forestry. *Grevillea robusta* is the most commonly planted agro- forestry species by farmers.

Evaluation of the productivity of various agro forestry practices has been done more for the macro-contour strips introduced by SECAP. This has mainly focused on fuel wood production (Mwihomeke and Chamshama, 2004) and the ecological effects of trees on farm on agricultural production (Pfeiffer, 1990). The tangy agro forestry practice is being evaluated to find out how to optimise both wood and food production with minimal conflicts with farmers at Shume forest Project. Genetically,

improved planting materials have also been determined in past tree species, provenances and progeny trials. In natural forests, achievement has been made in preparing community-based guidelines for management of forests (URT, 2001).

2.7.3 African Highlands Initiative (AHI)

This is a collaborative eco-regional research program focusing an integrated national resource management (INRM) in the highlands of East and Central Africa. Its main objective is to undertake research and development activities to improve agro-ecosystem and Natural Resource Management by addressing the multiple goals of farmers and communities in the highlands (AHI, 1997).

One of the major problems affecting land productivity in the highlands has been land degradation. As population pressure has built up, demand for fuel wood and building materials and land for cultivation has resulted in decimation of forest cover and bio-diversity. Intensive cultivation of steep slopes without adequate soil conservation measures has resulted in soil impoverishment through soil erosion and, in some cases, total loss of agricultural land due to gully formation. Land tenure systems, inappropriate extension approaches, and diminishing farm incomes have further discouraged investment in soil conservation, while intensification of cultivation has increased incidences of crop pests and diseases. The spiral of land degradation, reduced productivity, reduced farm incomes, and mining of the land resources has reduced the once prosperous highland communities to poverty and food insecurity (Amede *et al.,* 2006). AHI aims to strengthen approaches and develop methodologies to improve the effectiveness of research and development on NRM, build the

constitutional capacity to increase awareness and expertise to address NRM issues, collect, organize and disseminate information methodology and technology among partners and mobilize and strengthen partnership and risks between institutions to address agro-ecosystems and NRM issues more efficiently. AHI activities are based at benchmark sites within the highlands zone.

Addressing farm and landscape-level natural resource management problems and capturing related opportunities often requires innovation in the institutions that structure patterns of interaction among land users and other entities. Institutions may be defined as "rules of the game in society, the humanly devised constraints that shape human interaction" (North, 1990) or "decision structures" (Ostrom, *et al.*, 1994). Institutional innovations may therefore be defined as changes in the standard set of rules governing social behaviour and in the social structures and processes through which decisions are made. AHI has experimented with each of these forms of institutional innovation. Innovations in organizational structure have included the testing of diverse forms of farmer organization for farm-level technological innovation, demand-driven technology and information provision, and policy innovation. It has also included the testing of novel organizational structures (platforms) to foster district-level collaboration in natural resource management. AHI experimentation with organizational processes has been even more extensive. It has included processes for planning, for negotiating rules to govern collective action processes or natural resource management, for monitoring, and for enforcing agreed-upon rules. It has also included organizational processes for improving the effectiveness of innovations at farm, landscape, district, and national level (e.g.

within national agricultural research systems). Finally, AHI has experimented with rules for governing how external resources (technologies, training, credit) will be shared within communities; for governing collective action processes (contributions to be made, benefits accruing to different members, and sanctions to be applied when contributions are not made); and for governing individual behaviour at farm and landscape level (for example, to curtail certain practices having negative effects on other resource users or to negotiate and incentivize actions that individuals must take in addressing a common problem.

In Lushoto District AHI conducted different activities like soil fertility improvement, diversification and intensification and dissemination. Under soil fertility improvement major activities were in use of multipurpose trees and shrubs in soil and water conservation, use of improved fallow and use organic-inorganic nutrient resources in soil improvement. Under diversification and intensification improved crop varieties, high value crops and better livestock management practices were introduced. Under diversification the use of traditional dances as a dissemination tool as well as exchange visits were studied. Efforts were also directed towards facilitation of formation of credit associations to enable farmers acquire the necessary inputs in agricultural production (Johansson, 2001).

The diagnostic survey conducted in Lushoto by AHI, revealed a decline in banana production largely attributed to deteriorating soil health, soil erosion, low adoption of proven banana technologies, and at least partially due to a lack of innovative scaling out approaches (Masuki *et al.*, 2011). Furthermore most farmers were not practicing

soil and water conservation (SWC) because it is labour intensive. Focus group discussions and key informant interviews established that improved tomato, cabbages and banana germplasm were the three most preferred technologies and hence were considered important entry points. The uptake of these technologies was however different. Banana uptake was slowest because of the high cost planting materials. Limited planting materials were supplied by the AHI for multiplication using primary schools and farmer research groups (Masuki *et al.*, 2011).

In the early liberalization era (the 1980s) there was an increase in uncontrolled tree cutting and wild fires, cultivating very close to water sources, increase in vegetable cultivation in valleys, free grazing and non use of soil and water conservation measures, leading to further natural resources degradation. This was due to poor and or complete lack of enforcement of the by-laws that governed natural resources management. The consequences are depleted water resources including drying up of some water springs and low level of water flows in streams and rivers, reduced soil productivity and rampant and serious soil erosion, evidenced by complete drying up of some springs, increased seasonal availability of waters from some springs that also led to low levels of water flows in streams and rivers. In the late liberalisation era (1990s to 2000s) there was a move to strengthen NRM by establishing, Joint-NRM committees e.g. Joint Forest Management Initiatives, Community Based NRM initiatives and Community Based Organizations, to minimize these NRM resultant negative effects. There are different types of local institutions in the watershed based on what they do. These are production (crop and livestock), mutual assistance (locally known as Kiwili/Ngemo, Ngwe), educational (schools), religious,

recreational (sports and traditional dances), conflicts resolution (elders council) economical (credit) and health (mid-wives) institutions. The presence of social groups is strong within communities in the watershed and hence a good avenue for AHI activities (Ahmed, 2006).

2.8 Factors that Influence Scaling up of Local Level Rural Institutions

Where groups already exist, capacity building of existing groups can be more successful than forming a new group to which members are less likely to be committed. Similarly, rural people are less likely to resist adoption of an innovation when the new technique is based upon a concept or procedure they are already familiar with or are currently using. The World Bank (1992) has summarized organizational principles which might serve as broader guidelines to institutional development.

2.8.1 Situation specificity

Little participation of stakeholders in the collective use of natural resources at watershed level, which means social and power relations influence community activities, diverse agendas of stakeholders, and poor social interaction of the local organizations. The presence of weak and non-representative community organizations, that is, poor coordination between local organizations, lack of methodologies that strengthen collective action, poor access to information, and little participation in technology. Because of the above situation, research and development (R&D) projects in agriculture and NRM have little impact in relation to dissemination to farmers, poverty reduction, sustainability of the development

process, or on their impact on policy formulations. The above implies that we need to work with local communities and institutions to produce viable alternatives and benefits for a greater number of people, in wider geographical areas, and in a more rapid, equitable, and enduring manner (Gonsalves, 2001).

2.8.2 Farmer participation

The participation of stakeholders in selecting appropriate technologies at local level promotes their adoption and adaptation in a more efficient way than when external organizations alone are involved. Local organizations are widely recognized as the most important actors of watershed management and are key players in scaling out and scaling up processes, which lead to involving more beneficiaries, in wider geographical areas, and in a quicker, more equitable, and long-lasting manner (Zapata *et al.*, 2006).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 The Study Area

The study was carried out in Lushoto District. The District was selected because it is among the areas where different initiatives on land management were implemented including the ones that were implemented by AHI, SECAP, TIPDO and TAFORI. The District has an area of 3500km^2 and accounts for about 12.8% of Tanga Region. It borders Korogwe District to the south and Mkinga District in the east, Same District of Kilimanjaro Region in the north and the Republic of Kenya to the northwest. Its population is estimated to be 418 652 people, of which 96% are rural residents whereby 190 873 are males and 227 779 are females (URT, 2002).

3.1.1 Topography

In northern Tanzania close to the Kenyan border and about 70 to 100 km from Indian Ocean, the Usambara Mountains rise to an elevation of over 2200m as they are bordered by the Umba River plains in the north, the Pare Mountains in the northwest and the Maasai steppe in the south. The Usambara Mountains are sub divided by the Lwengera river valley into two massifs, the west and east Usambara.

The west Usambara covers an area of 1740 km^2 the mountainous parts almost exactly delineating the Lushoto District. Highly steep and mountainous slopes, dissected by rather narrow valley bottoms, determine the typography of the west Usambara. In the northern part, Mlalo and Mlola basins with undulating grounds are found. The

agricultural areas lie mainly between 1000 and 2000m as are located in the valley bottoms (Egger *et al.*, 1980). The high lands between altitude of 1000 to 2000masl cover about 75 % (2625km^2) of the total District area. The low land between altitudes of 300 to 600m above sea level covers about 25% (875) km^2 of the total District area.

3.1.2 Climatic condition

Due to the mountainous relief, the climate of Lushoto District is characterized by an extremely high rainfall variability. Mean annual precipitation decreases from the southwest to the north of Usambara, from 2000mm to 600mm per year. Two main seasons can be distinguished, the long rainy season from March to May and the short rainy season from November to December. An intermediate rainy season only occurs in the higher regions of the central west Usambara, whereas in most parts the dry season from June to November is experienced (Egger *et al*, 1980).

3.1.3 Economic activities

Most (85%) of the people in Lushoto District are peasants engaged in small-scale farming (men and women work together on their farms). The rest are traders and salaried employees. The Usambara Mountains and Lushoto District are known for their agricultural diversity, especially for the great variety of fruits, bananas, mangoes, apples, pears, plums and papayas. Main food crops are maize, bananas, beans, vegetables and different types of root crops such as round potatoes, yams and cassava. The main cash crops are coffee, tea and vegetables. Also several spices such as cardamom, chilli and vanilla are grown in the area (Egger *et al*, 1980).

3.1.4 Natural resources

The District has natural resources which include forests, game reserves and minerals. The scenic mountain forest game reserves offer good site to attract both local and foreign tourists. Forests cover 41 720 hectares equivalent to 12% of the total District area. The forests are divided in to dense and open forests (scrub, bush, thick forest reserves). Most of the forests are natural while people have planted some of them. The District encourages aforestation to curb the deforestation of Usambara Mountains and prevent the loss of their habitats that are internationally recognized for high level of diversity and endemicity (Nyambo and Kombo, 2006).

3.2 Research Design

A mixed method research design was used where there was a combination of two designs which are case study research design and a cross-sectional research design. A case study was used to collect qualitative data from three villages which were Migambo, Kwalei and Baga from Kwai, Mamba and Baga wards respectively. Case study research design was adopted because it assists in the understanding of complex issues such as land management technologies and can extend or add strength to what is already known through previous research (Yin, 2002). A key strength of the case study design involved using multiple sources and techniques in the process of data gathering, it also involved, for instance, in-depth comprehensive study of a person, a social link situation, a programme or a community.

This design has been chosen because it describes a unit in detail, in context and holistically. In a case study a great deal can be learnt from a few examples of the

phenomena under study (Tromp *et al.*, 2006).The design helped in looking for detailed information on the study from various local institutions. It is very useful design in studying complex factors in a given situation and it studies everything about something rather than something about everything. A cross-section research design was also used to collect quantitative data from the individual respondents such data included demographic characteristics of the respondents and production, and their income trends.

3.3 Sample and sampling procedure

In this study, multi stage and simple random sampling techniques were used to select number of cases to be studied (geographical location) and number of respondents to be involved in data collection through a questionnaire. Lushoto district was selected out of 8 district of Tanga region. Lushoto district was selected because different initiatives on Land management were conducted which involves the use of local institutions, which are the main key of this study. The multi stage technique involved the following stages.

Stage 1: Selection of the Wards

Purposive sampling was used to get three wards of Mamba, Kwai and Baga out of 32 wards of Lushoto district. The wards were selected because of the people involvement in working with institutions which comprises of the farmers as members of the institutions and one of the major activities that the institutions perform includes land management.

Stage 2: Selection of the villages

Three villages of Migambo from Kwai ward, Kwalei from Mamba ward and Baga from Baga ward were purposively selected during the stud. The criterion for their selection was that there were existing and active local institutions in those villages.

Stage 3: Selection of the local institutions/groups

Purposive sampling was also employed to get groups of famers to be included in the interview. In Migambo village 7 groups were selected, In Baga village 3 groups were selected and in Kwalei 3 groups were selected, therefore, a total of 13 groups that were still operating in the study area. Active and well capacitated local institutions were found in Migambo village at Kwai ward as the reason for the village to have big number of selected local institutions compared to Kwalei and Baga. During the study some of the groups that were introduced in 1996 were not active therefore other 5 groups which were not existing were identified in order for the researcher to know what was the main reasons for their inactiveness.

3.3.1 Selection of the respondents

Simple random sampling was used to select respondents from the identified groups in the villages. In Migambo village 32 respondents were selected, in Baga village 14 respondents were selected and in Kwalei village 14 respondents were selected to make a total of 60 respondents who were also involved in FGDs. Key informants and FGDs were used with reference to knowledge they have about land management and role of local institutions on land management. In each ward, purposive sampling technique was used to select key informants who were involved in the interview, in

Migambo village 2 key informants were selected, in Baga ward 1 key informant was selected and in Kwalei 2 key informants were selected. Key informants and FGDs included local government leaders, group leaders, the famers who were interviewed through questionnaire and other influential people.

3.4 Data Collection Procedures

Different methods of data collection were used to acquire useful information that was used in the study from the respondents as well as the key informants from the study area. Data collection tools and techniques included observations, questionnaires, checklists and interview guide. Questionnaires, structured interviews, observation, checklist and focus group discussion were used to collect quantitative and quantitative data, such as how many local institutions exist in the wards which deal with issues related to land management and natural resources in the study area.

3.4.1 Primary data collection

Primary data both quantitative and qualitative for this study was collected using checklist, research guide in focus group discussions (FGDs), key informants and interviews through interview schedule, which was administered to the respondents chosen randomly in order to assess the functions of the institutions in ensuring sustainable land management and the impact of natural resource management on people's livelihood. Primary data that were collected included the available local institutions by names, numbers, capacity, roles that they perform and their achievements in land management. Information on Local institutions which are not active were also sources of the information which was collected as primary data in

order to know the reasons for their collapse so that other initiatives of scaling up local level rural institutions can take into consideration the reasons behind the failure of some of the local institutions that existed before. Different instruments were used to collect primary data which include the following:

3.4.1.1 Questionnaire

This method was applied through administration by the researcher due to the reason that the research included both literate and the illiterate respondents, so administration of the questionnaires by the researcher was inevitable for better results. It involved both closed and open questions to allow the respondents to explain what they understood about a particular issue according to the researcher's interests. After obtaining the research clearance from the DALDO's office, questionnaire pre-testing was conducted. The aim was to refine the questions by removing ambiguous questions, or including important questions which had been omitted. The researchers and two research assistants did the pre-testing. Some of the questions were omitted due to the reason that some of them were repeated and some of the questions were added due to their importance in the study.

3.4.1.2 Observation

During the study observations were made by visiting some areas where land management technologies were being practised. Areas that were visited included Baga, Kwalei, and Kwai wards whereby various land management techniques had been applied. Through making several visits, it was possible to capture the real situation. During observation land management technologies that were observed to

be practised by different people included tree planting in almost all wards visited, (*makinga maji)* and terraces (*fanya juu)* and contours.

Farm visits were made to each village. The aim was to assess the adopted land management technologies by the famers, irrigation, types of crops grown and how the technologies affect the growth of the crops. Discussions with the agricultural extension officers were held during farm visits.

3.4.1.3 Interview checklist

In this tool different respondents were involved, including local institutions members of the 13 selected local institutions whereby a total of 60 respondents were asked to give information on the roles, capacity and other information about the participation of their institutions on land management activities so as to see if it is feasible for local institutions to be scaled up for better performance. Other 5 key informants who were influential people in the community such as District Agricultural Officers and VEOs and WEOs were also interviewed so as to give information about the local institutions that belong to their areas and their performance on land management so as to see if there is any possibility for them being scaled up for better performance.

3.4.1.4 Focus group discussions

The researcher together with the field assistants conducted focus group discussions with local institution members in the villages of Migambo at Kwai ward, Baga village at Baga ward, and Kwalei village at Mamba ward. During focus group discussions each institution was represented by members who were randomly

selected through simple random sampling. The composition of the participants in the focus group discussions included males and females, though females were more compared to males because there is no good participation of males in farmers' groups in the study area. Focus group discussions were used to gather information about the study. Two focus group discussions were conducted in each ward. Among of the themes that were discussed were the roles and responsibilities of the local institutions on land management, the capacity of the institutions, weaknesses, achievements and the way forward for scaling up these local institutions. During the discussion the main objective was to recognise if there are any factors which influence scaling up of these local institutions in Lushoto District.

3.4.2 Secondary data

In terms of secondary data both quantitative and qualitative data were collected. The data included number of members who joined the local institutions during their establishment, the institutions pioneers and kinds of technologies that were introduced to the farmers. The information was obtained from published documents including materials such as local institutions reports, and government reports and other relevant documents related to the study from Lushoto District Office. Among of the data collected include different organisations that work with groups of farmers, donors that have been giving assistance to the local institutions and the networking of the local institutions.

3.5 Data Processing and Analysis

3.5.1 Data processing

Data processing includes three main activities which are cleaning, coding and data entry.Data were cleaned after being collected in order to omit errors. Errors that were corrected include unclear information or responses from the respondents. This activity aimed at simplifying the activity of entering data in to the computer for analysis. Data coding involved the activity of assigning numbers to the answered that were provided by the respondents in different variables that were studied. The activity of data coding was followed by data entry to a computer for analysis where Statistical Package for Social Science (SPSS) was used to enter data for analysis.

3.5.2 Data analysis

The Statistical Package for Social Sciences (SPSS) software was used to enter and analyze data collected from respondents. Descriptive statistics such as frequencies, and percentages were computed. Qualitative data were analysed using content analysis technique. Content analysis systematically describes the form or content of written or spoken materials. In content analysis a classification system is developed to record the information, the content of the interviews was broken down into smallest meaningful units of information. In interpreting the results, the frequency with which a symbol or idea appears may be interpreted as a measure of importance.

T-test was also used to measure the impact of land management technologies on production among the members of the institutions with the aim of observing how far the technologies have been of importance to the farmers in the study area.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Characteristics of the Respondents

This section discusses the general socio-economic characteristics of the whole sample which includes local institution members, group leaders, and other influential people. The characteristics which were examined in the study were age, sex, education level and source of income.

Table 1: Characteristics of the respondents (n= 60)

Characteristic	Responses	Frequency	Percent
Respondents' age (yrs)	25-35	11	18.3
	36-46	31	51.7
	47-55	13	21.7
	56 and above	5	8.3
Respondents' sex	Male	17	28.3
	Female	43	71.7
Respondents' education level	None	6	10.0
	Primary education	53	88.3
	Secondary education	1	1.7
Respondents' source of income	Businessman/woman	1	1.7
	Farming	58	96.6
	Other	1	1.7

4.1.1 Respondents' age

The age of the respondents ranged from 18 to 60 years old, about half (51.7%) being the ones aged between 36-46 years old, 21.7% aged between 46-55 years old. 18.3% aged between 25-35 and those aged above 55 were 8.3% (Table 1). The result imply that there is a huge population of young age, which is the working age compared to old age, this is because of the high death rate of the old aged people in the study area. According to PSP (2003), the population which does not have high dependence age tends to achieve development faster than the one having so many dependent ages.

Within the study area, working age was observed to be high which is between 18 years-45years compared to the dependence age which is above 55 years for older people and below 18 who are children, that provide a feasible situation on the kind of members who are available to the local institutions thus there is still an existing opportunity to work with the local institutions in the study area.

4.1.2 Respondents' sex

With regards to sex of the respondents in the study area, females were observed to be of higher percentage at 71.7% compared to males who constituted 28.3% (Table 1). This indicates that females in the study area are easier to accept the introduced interventions for development more than men and there is little awareness on importance of gender in development interventions. It is a recognized fact that the success of development efforts' depend, in part, on the quality of the communication established with the populations concerned and on the taking into account of gender

issues (FAO, 2011). In that case quantitative scaling up should start by increasing the number of men in the identified local institutions to reflect the importance of gender balance in development activities.

4.1.3 Education level

The education level of the respondents is presented in Table 1. The majority (88.3%) of the respondents have primary education, the ones who have no formal education comprise 10.0% and only 1.7% had secondary education. This reflects that efforts on provision of education in rural areas is still needed because up to the present still some people do not have formal education while the number of interventions towards provision of education were introduced by the government, such as Universal Primary Education (UPE) and adult education. Todaro (1992) argued that formal education not only imparts knowledge and skills to individuals to enable them to function as agents of economic change in the society, it also imparts values, ideas, attitudes and aspirations which may be in the nation's best development interest. In relation to scaling up of the local institutions, the presence of formal education to the majority of the local institutions' members provides a feasible picture for scaling up these local institutions.

4.1.4 Source of income of the respondents

The major economic activity carried out in the study area is farming which is done by 96.6% of the respondents (Table 1). The study area is important for production of fruits, round potatoes, maize, beans, and vegetables. Farmers in the area produce these crops for cash and for home use. The implication of this observation is that

there is a need for different initiatives to help the farmers in production so as to improve their economic status and that will act as the way to alleviate poverty to the majority in the study area since agriculture is their main source of income. A study by Godoy and Dewbre (2010) on the importance of agriculture in poverty alleviation shows that good agricultural performance operates to reduce measured poverty through both the income and the price channels. Because a most of the poor people depend on agriculture for their income, it is natural to think that an increase in farm income would led to poverty reduction, therefore improvement of agricultural performance in the study area is important to the people and the country at large as it is recognized that 80% of the Tanzanians depend on agriculture for their livelihood. The improvement can be done through functional scaling up which involves helping the groups with financial assistance to facilitate their functions such as buying agricultural inputs and by providing technical support to the institutions.

4.2 Identification and Characterization of the Local Institutions

During the study, different local institutions were identified and characterized as one of the objective of this study. The characterization of local institutions was based on names, number of members, institutional set up, geographical coverage, status, activities and objectives. Under this characterization, strengths and weaknesses of the local institutions were identified which are also important determinants for scaling up.

4.2.1 Identification of local institutions

In the study area, 13 local institutions were identified by names from the three villages of Migambo, Kwalei and Baga. From Migambo village local institutions identified include Tamilwai, Tozeshai, Mapambano, Togolai, Dira, Mwelekeo and Kundanai. From Kwalei village there were Upendo, Jitegemee, and Kiwakama. From Baga village identified institutions include; Jitegemee (a), Nguvukazi and Jitegemee (b) as presented in Table 2. The names of the local institutions imply enthusiasm and spirit of local institutions towards development. Some of the names originated from the local language of Sambaa people in the study area, for example "*Tozeshai*" is a sambaa word which means persist in English. This implies that members should not let the institution die and this led to institutional sustainability.

Table 2: Local institutions identified in the study area

Village	Local institutions
Migambo	Tamilwai, Tozeshai, Mapambano, Togolai, Dira, Mwelekeo and Kundanai
Kwalei	Upendo, Jitegemee, and Kiwakama
Baga	Jitegemee (A), Nguvukazi, and Jitegemee (B)

4.2.2 Characteristics of local institutions based on number of members

Majority (77%) of the local institutions were observed to have members between 20 and 40 members as shown by Table 3 below. Very few were observed to have members below 20 and above 40 which is 8% and 15%, respectively. Implication on the number of members in the institutions is that there is still participation of people

working with groups in the study area; this ensures proper use of resources like capital. Quantitative scaling up of these local institutions can be one of the ways to increase their geographical coverage due to the fact that quantitative scaling up will increase the number of members and some of the members will be from other villages depending on the extent of community sensitisation.

Table 3: Number of members in the local institutions (n=13)

Number of members	Frequency	Percent
1 to 20	1	8.0
21 to 40	10	77.0
41 to 60	2	15.0
Total	13	100

4.2.3 Characteristics of local institutions based on institutional pioneers

Institutional pioneers can be understood as the founders or organizations which initiated the formation of the local institutions in the study area. During the study, three main pioneers who were involved in the formation of the local institutions in the study area were identified. These include African Highlands Initiative (AHI), Soil Erosion Control and Agro-forestry Project (SECAP) and Traditional Irrigation Programme Development Organization (TIPDO). Furthermore the study revealed that, 59% of the institutions were formed by AHI, 23% by SECAP and 18% by TIP (Fig. 2).

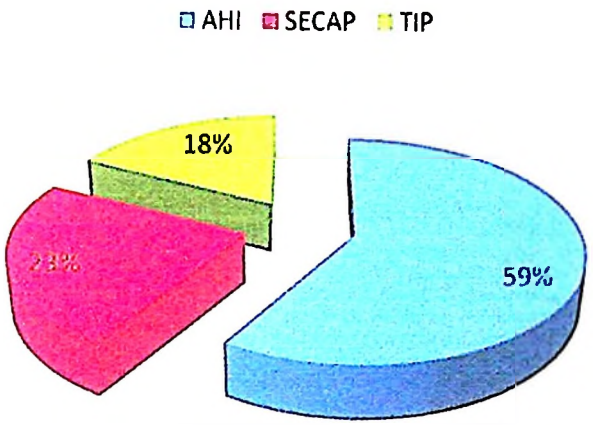

Figure 2: Institutional setup pioneers

Currently all the pioneers do not exist in the study area, but the local institutions that were formed during their existence are still working to the present though not all, therefore it implies that people in the study area have seen the importance of working in groups that is why the groups still exist. Functional, political and quantitative scaling up of the existing local institutions is feasible due to the sustainability demonstrated by these local institutions. Scaling up of these local institutions is important especially when it is suggested that new agricultural technologies are generated by research institutions, universities, private companies, and by the farmers themselves (FAO, 2006).

4.2.4 Characteristics of local institutions based on the year of formation

The findings from the study area show that formation of local institutions started in the year 1999. Three categories on the year of formation of the local institutions were used for analysis and it was observed that the majority of the institutions formed

between 2006 and 2010 which is 62.5%, others were formed in the year 1996 to 2000 and 2001 to 2005 which constituted 23.2% and 15.3% respectively as shown by Table 4.

Table 4: Year of formation of institutions (n=13)

Year of formation	Frequency	Percentage
1996-2000	3	23.2
2001-2005	2	15.3
2006-2010	8	62.5
Total	13	100

The implication of the results is that very few local institutions which were formed in 1990s were able to continue working up to the present, which indicates that the local institutions sustainability is low.

4.2.5 Characteristics of local institutions based on geographical coverage

Geographical coverage in this context is referred to the area of operation.The findings from the study showed that majority of the institutions operate their activities within the ward which comprises of 62% of the institutions identified and others operate within the village and the district which comprise of 23% and 15%, respectively. During the study none of the institutions were identified to operate outside the district as presented in Table 5.

Table 5: The area of operation of the local institutions (n=13)

Geographical coverage	Frequency	Percent
Within the village	3	23.0
Within the ward	8	62.0
Within the district	2	15.0
Total	13	100

In scaling up of these local institutions, one of the ways that can be adopted is political scaling up which includes providing the local institutions with ability to expand their boundaries so as to increase their impact outside the district. In political scaling up an organization's members or local communities are stimulated to participate in the body of policy formulation (Uvin and Miller,1996), which could help the farmers to put into consideration some of their needs when policies are formulated.

4.2.6 Characteristics of local institutions based on registration, and presence of constitution

In the study area, registration of the local institutions started from the village level to the district level whereby among of the local institutions which have been registered up to the district level is Tamilwai at Migambo village in Kwai Ward. All other local institutions are registered to the village government only which are 85%, except 2(15%) which are registered at district level as Table 6 shows. This implies that, recognition on the existence of unregistered local institutions by the Government is low and this can result into low assistance of Government in different activities of

the institutions such as provision of the trainers and financial assistance when needed.

Table 6: Level of registration of the local institutions (n=13)

Registration level	Number of institutions	Percent
At the village level	11	85.0
At the district level	2	15.0
Total	13	100

A study by Niang (2005) on importance of registration argues that registration of the local institutions is important due to the reason that it increases security and unregistered institutions can be at a risk of collapsing. Political scaling up of the institutions in the study area can provide the members with importance of registration and that will improve their security, participation and sustainability.

In addition, these local institutions work under guided rules and regulations. Among the rules that have been established in the institutions include the ones that ensure the presence of the members within the institution. Such rules include the punishment that is given to members if they have poor attendance and participation in different activities of the institution. Such punishments include paying a fine of Tsh 500 for not attending meetings and if a person does not attend the meeting five times it amounts to self-termination from membership. Table 7 shows that 10 local institutions which is 77% are operating with a constitution and only 3 which is 23% do not have a constitution. The findings imply that the local institutions which have

constitutions are likely to be more sustainable compared to the ones that do not have a constitution to govern their performance.

Table 7: The presence of a constitution within local institutions (n=13)

Responses	Frequency	Percent
Yes	10	77.0
No	3	23.0
Total	13	100

A study by Born (2011) suggests that constitutions among local institutions establishes good practices for group governance, describes different ways of how decisions can be made, and defines a group's goal, objectives and internal rules and regulations.

There are various characteristics and activities which are done by these local level rural institutions. All these characterization and activities are geared towards the sustainability of land management. More information has been provided by appendix five which is annexed to the last page of this work.

4.3 Roles of Local Institutions in Sustainable Land Management

Local institutions in the study area were recognised to perform different roles and responsibilities which include resource mobilization, planning, and supporting farmers training on land management. The subsection below provides more information on this.

4.3.1 Resource mobilization

Ensuring resource mobilization is one of the roles of the local institutions in Migambo, Kwalei and Baga villages. Resource mobilization is done by ensuring every member of the institution makes his or her monthly contribution to the institution. This contribution helps the members to take loans from the institution, buying seeds which the institution distributes to the members so that they can plant the seeds in their own farms. Resource mobilization in the study area is not done by contributing money itself but also contribution in kind where farmers contribute by giving their farm harvest. It can be said that within local institutions there have been created SACCOS to help the farmers.

The findings also show that the local institutions sometimes receive some financial assistance to help them in giving loans to the farmers. The government through the Agricultural Department provides such assistance to the local institutions so as to increase their capacities. These loans given to farmers help in improving the capital in the institutions because those farmers who borrow money they repay them with interest.

The findings also show that majority of the institutions do not receive financial assistance from outside but through their own contribution. Table 8 below shows that 11 local institutions which is 85% contribute monthly to their respective local institutions and only 2 (15%) sometimes receive assistance from the government but also the members contribute monthly income to the institutions as well.

Table 8: Resource mobilization within the local institutions (n=13)

Source of income	Frequency	Percent
Self contributions	11	85.0
From the government	2	15.0
Total	13	100

The implication of the results is that members understand their goals and objectives and also they are eager for development and functionally scaling up can help to increase resource mobilization within local institutions as well as increasing their sustainability and efficiency.

4.3.2 Supporting farmer training

Local institutions in the study area support training to their members which include all farmers. In supporting training local institutions leaders sensitise the members to participate. The training is normally conducted in a plot that has been earmarked to be used for training only. Such plots include the farmer field school which is located at Migambo village. By using this plot, farmers get an opportunity to learn new technologies of land management which they later go and apply at their own farms. There are different trainers from inside and outside the district who conduct training to farmers. These people include trainers from SUA, from African Highlands Initiative and the department of agriculture from the district council. Through training, groups of farmers were able to learn different land management technologies. (Fig. 3) below shows the types of technologies introduced to the

members and the level of adoption among the interviewed members of the local institutions.

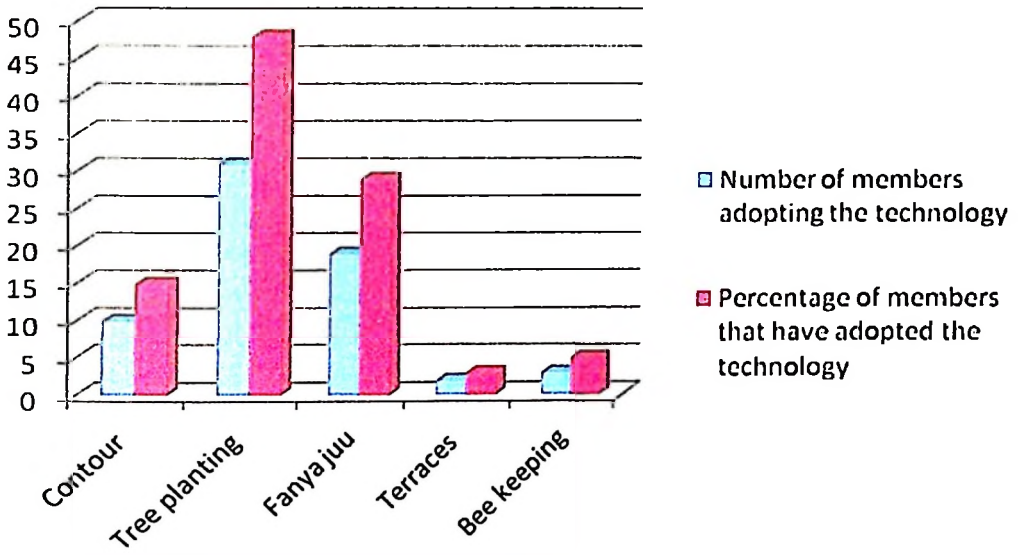

Figure 3: Land management technologies introduced and their level of adoption

4.3.2.1 Contour

The findings from the study area revealed that through the farmer field school farmers were able to learn how to make contours on their own farms which helps in increasing soil fertility and where this technology is more applicable depending on the topography of the farms. The application of the contour technology was analysed by looking at the number of members who apply it on their own farms and it was revealed that only 10 (15%) members out of 60 who were interviewed apply it as shown in Figure 3.

4.3.2.2 Tree Planting

Tree planting is another technology that was introduced to the farmers. This technology of land management helps the farms to remain with moisture for a long time and as well as improving soil fertility. About 46.7% of the respondents from Migambo, Kwalei and Baga were observed to use this technology more compared to other introduced technologies as shown in Fig 3. This is because apart from providing moisture and improving soil fertility farmers are also able to get building materials like timber and poles, power (firewood) for cooking. One of the respondents was quoted saying that "*we like to plant trees in our farms because they help us to get firewood, trees like grevillea robusta are most liked*".

In the process of ensuring that land management is done to every farmer, local institutions distribute tree seeds to every member so that members can plant them in their own farms and the leaders of the local institutions supervise the whole activity of tree planting. Plate 1 below shows one of the plots of a farmer from Kwalei village who adopted tree planting as a land management technology.

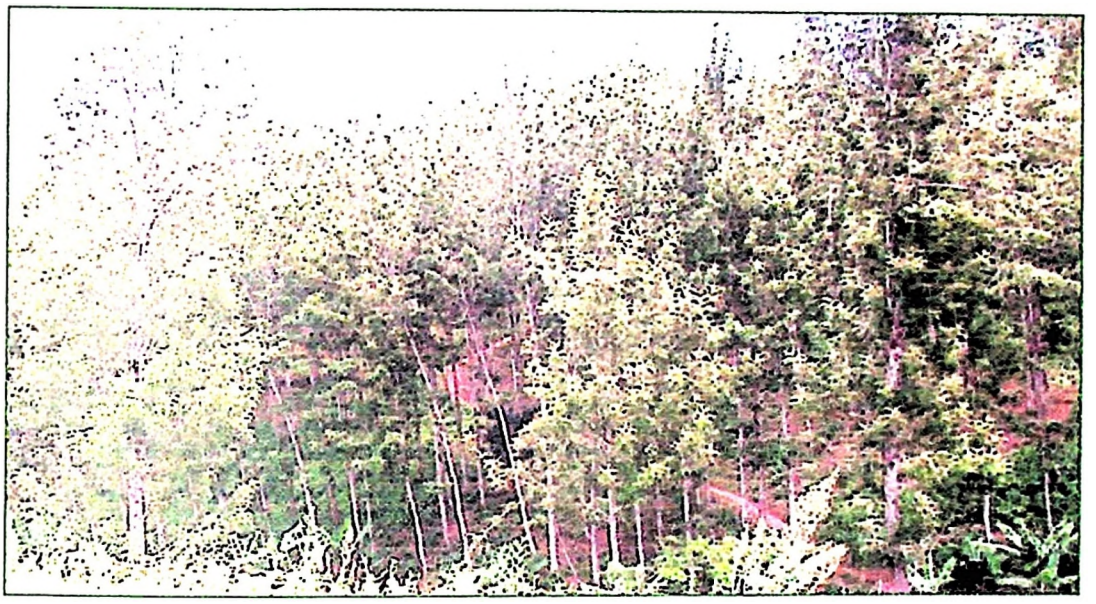

Plate 1: Tree planting at Kwalei

4.3.2.3 "Fanya juu" terraces

This is also a land management technology which farmers use to conserve land. Farmers whose farms are situated in the gentle slopes are the ones who apply this kind of technology. The technology allow water to stay in the soil for a long time due to construction of water channels and that helps the soil to have enough moisture to support plants and to increase soil fertility. Among of the 60 farmers who were interviewed 18 (30.0%) apply the technology (Fig. 3). Plate 2 below shows " fanya juu" terraces at Baga ward which were constructed at one of the member farm.

Plate 2: "*Fanya juu*" at Baga village

4.3.2.4 Terraces

Training to the farmers also involved the application of terracing as one of the land management technologies. The farmers were taught how terraces are made and to which topography are they applicable. This kind of technology was also found to be applied to some of the farmers in Kwalei, Baga and Migambo villages. There were few members who were observed to apply this technology due to the reason that among of the 60 farmers who were interviewed only 2(3.3%) responded to apply the technology. Plate 3 below shows maize plants which were planted at Migambo village in one of the farmers who used terreces.

Plate 3: Terraces at Migambo village

4.3.2.5 Beekeeping

This is peculiar land management technology that farmers from Migambo village use, its peculiarity is brought by being considered to be a technology that helps to conserve land rather than being a source of income through honey production only. The bees are kept around water sources so as to prevent water sources from being destroyed by the community members. This is a very effective land management technology due to the reason that it enables the institution to have honey for selling and for food as well as helping the farmers in irrigation farming and for domestic use. Ten beehives from Migambo were observed during the study which belong to Tamilwai as an institution. In addition to that 3 farmers, which is equal to 5.0% of the 60 interviewed farmers responded to use this technology as well on their own farms as Figure 3 shows. Plate 4 below shows one of the beehives which was located near a water source at Migambo village.

Plate 4: Beehive at Migambo village

4.3.3 Planning

The local institutions also have the role of planning on different activities concerning their institutions. Among of the plans include how they should get the trainers from different partners to provide them with training on land management technologies, where they should get seeds which are reliable, and plans on how they should overcome the challenges that the institutions face in trying to meet their objectives on a particular issue. Planning goes hand in hand with giving directions to the members about how different activities of local institutions can be handled.

Based on the above roles and responsibilities of local institutions, it can be concluded that local institutions are ready to accept changes that can affect their performance in one way or another. This has been seen by observation on training and technology adaptation by the local institutions. In many areas where training have been done, people are capable of applying them and they find that it is advantageous for their farming activities, therefore governmental and non-governmental organisations are

encouraged to provide any technical support which will help to improve farming activities as well as to work with local institutions. The identified role of local institutions in the study area shows that there is a need for the government to focus and promote local institutions for better results on agricultural development especially this time when in which the government is pushing the "*Kilimo Kwanza*" agenda.

4.4 Achievements of Local Institutions

Achievements of local institutions in the study area were assessed by looking at the performance of the local institutions in attaining their goals and objectives.

4.4.1 Creating awareness on land management to the community

Findings from the study show that each institution identified in the study area has succeeded in creating awareness on land management to the community in order to ensure land management in their farms. This has been done by conducting different training on land management to the members of the local institutions. This training provided knowledge to the members on the importance of land management on agriculture as many of the people in rural areas depend on agriculture. The District Council with collaboration of different NGOs that existed in Lushoto district contributed to impart knowledge concerning land management to the famers who are in different local institutions. That is to say the local institutions are capable of influencing the members of the local institutions on the adoption of the new technologies on land management.

4.4.2 Increasing production and improving life standard of the members

One of the objectives of the local institutions is to increase production and improving living standards of the members. The findings of the study show that these local institutions have succeeded to achieve this objective through providing good quality seeds to farmers, and by conducting training on different land management practices which improve the fertility of the soil and hence increase production as Table 9 shows and income as the direct impact and life standard improvement as the indirect impact, one member of the local institution was quoted saying that "*at least now the harvests have increased not like the previous times, we can even pay school fees for our children* ".

In the study area, land management technologies that have been introduced have been a factor in the increase of production. Products that farmers are producing include maize, tomatoes, potatoes, beans, and cabbages. In the current study, the crops production trend was taken to show the performance of the local institutions in increasing production as one of their objectives. Land management allows the farmers to achieve maximum productivity while having the smallest impact on the environment and natural resources. It increases profits while at the same time lowering costs.

Table 9: Change in production among the interviewed farmers before and after the introduction of land management technologies (Paired t-test P≤ 0.05)

Type of crop	Yield before LM technologies (in bags for)	Yield after LM technologies (in bags for)	Significance test (t-test P< 0.05)	Income before LM technologies (Tsh)	Income after LM technologies (Tsh)	Significance test (t-test P< 0.05)
Maize	48	123	0.000	369,000	1935000	0.034*
Beans	44	109	0.000	1 963 000	7 356 000	0.000**
Potatoes	94	261	0.000	2309000	13698000	0.000**
Cabbages	164	492	0.000	2478000	11565000	0.000**
Tomatoes	43	117	0.000	1037000	4362008	0.000**

* denote significance at 5% level.

**denote significance at 1% level

The soil is the soul of a farm, and proper management will decrease cost and labour while increasing profit. One of the reasons being the methods of land management sustained food production. Proper soil management will maximize crop production while containing cost associated with irrigation, fertilization and seeding (Robin *et al.*, 2001).

The analysis on production and income was performed by using t-test with $P \leq 0.05$ and $P \leq 0.01$ levels of significance whereby the analysis covered the main crops that are cultivated by the farmers in the study area are indicated in Table 9. The analysis aimed at discovering the impacts of land management technologies since the time when they were introduced in the study area. The analysis also was done while other factors remained constant, these factors include inflation on income and climatic changes on production. The analysis shows that there was a significant difference in production and income before and after the introduction of land management among farmers in the study area as shown in Table 9.

This achievement shows that working with local institutions can be one of the ways to alleviate poverty among people especially farmers through agriculture as poverty alleviation is one of the millennium development goals (MDGs). Therefore continuing working with local institutions for poverty alleviation is important.

4.4.3 Creating unity among small holder farmers

Another achievement of local institutions in the study area was assessed by looking at the performance of local institutions ability to create unity among themselves as

one of their objectives. Unity among small holder farmers is created through joint meetings which local institutions conduct twice a year. In creating unity, a local institution's leader ensures networking among the local institutions, a networking such as MVIWATA. This has been created due to the dissemination of information among the institutions on different immediate problems about their activities such as prices of their commodities. Oneness is strengthened if regular communication exists between the various groups (Mattee and Lassalle,1994). By networking on the various interest and experiences, each institution is influenced in the same way that it can influence the other group for the interest of the community.

4.5 Local Institutional Capacities

Capacity is defined as the ability of individuals and organizations to perform their functions effectively, efficiently, and in a sustainable manner (UNDP, 1998). Capacity is also a set of attributes, capabilities, and resources of an organization that enables it to undertake its mission. Linked to the concept of capacity development is that of facilitation. This concept implies the provision of assistance and support to organizational processes by external and internal agents. Facilitation may involve stimulating, motivating, guiding, and providing technical or political support to the implementation of organizational processes.

The findings from the study area revealed groups that have demonstrated to have strong institutional capacity and that become a good model that influences scaling up land management practices in their area, these groups include Tamilwai, Tozeshai, Togolai and Mwelekeo from Migambo village, these institutions have good and

systematic structures for management and running their day to day activities that include communication and information systems, resource mobilization strategies such as contribution of monthly earnings of all the farmers which helps to ensure their institutions sustainability together with activities which are performed after the project phase out. The main aim of these meetings is to inform the members on the status and progress of their group which includes progression on the contribution of the members and expenditure report of the group. The groups were observed to have good legal recognition to the government through registration.

Three groups from Kwalei and Baga villages were observed to be weak during the study. These include Jitegemee (a) and Jitegemee (b) from Baga and Kiwakama from Kwalei. Their weakness has been contributed by poor leadership as one of the farmers from Kwalei was quoted saying that: *" The problem is that, leaders let us down"*.

4.6 Challenges Facing Local Institutions

The study identified a number of challenges that these local institutions face in the process of performing different activities in their institutions and the difficulties that farmers face in ensuring that land management technologies are well practised.

4.6.1 Withdrawal of members from the institutions

Among of the greatest challenges that local institutions face in the study area is members' withdrawal from the institutions. Some of the members join in the institutions and after a short period of time they drop out. This affects the activities

and performance of the institutions due to the reasons that some of the members who may drop out of the institutions hold important positions in the institutions and this makes other members to drop out too. Among the 17 local institutions examined during the study on this problems four of them which is 23% are inactive due to this problem, 9 (52%) still exist but they experience the problems and only 6 (35%) are strong and do not experience any problems as Table 10 below shows.

Table 10: Experiences of the local institutions on withdrawal of members in their local institutions. (n=17)

Responses	Frequency	Percent
Institutions that inactive due to members drop out	4	23.0
Institutions that are still working but they experience the problem	9	52.0
Institutions that are strong and do not experience the problem	6	35.0
Total	17	100

The main reason for the dropouts is that, many of the local institutions depend on donors who help them with different activities related to land management including being provided with experts to teach them different technologies, financial assistance and seeds, so if the donor stops providing such assistance to the local institution members fail to work on their own initiatives and leave their institutions. Apart from this reason, other reasons which were presented by the respondents as contributing towards the failure of the local institutions include poor training of members which

was presented by 24 (40.0%) out of 60 interviewed members, withdrawal of donors 33 (55.0%) and poor leadership mentioned by 3 (5.0%) as Table 11 shows.

Table 11: Reasons for the withdrawal of the members from the institutions (n=60)

Reasons	Frequency	Percentage
Poor training	24	40.0
Withdraw of the donor	33	55.0
Poor leadership	3	5.0
Total	**60**	**100**

4.6.2 Lack of capital

Another challenge that faces the local institutions mainly farmers is lack of enough capital. This is because farmers in Lushoto district are very poor to the point that some of the technologies of land management become difficult for them to adopt. The technologies which are hard to adopt include the ones that need tools like hoes, bush-knives, axes, rakes and other farming equipments for example *"fanya juu"*. Lack of capital also causes farmers to buy poor quality seeds as a result they get low production. Among of the 60 respondents who were interviewed, 47 (78.3%) responded that they face the problem of lack of enough capital and 13 (21.7%) responded that they do not face the problem. The results are presented in Table 12.

Table 12: Response on lack of capital (n=60)

Response	Frequency	Percent
Yes	47	78.3
No	13	21.7
Total	60	100

4.6.3 High prices of agricultural inputs

High prices of agricultural inputs which include agricultural seeds and fertilizers is another challenge that local institutions face. Majority of respondents responded that the problem of high prices causes them to earn little at the time of harvesting. Among of 60 members of the local institutions who were interviewed 49 (81.7%) responded to have experienced the problem and only 11(18.3%) responded not to have experienced the problem. Table 13 below shows the result of the analysis.

Table 13: Responses on the price of agricultural inputs (n=60)

Responses	Frequency	Percent
Yes	49	81.7
No	11	18.3
Total	60	100

The implication of the results is that, the government has not succeeded in controlling the price of the agricultural inputs which could help the poor farmers to afford them. That is to say organisational scaling up by giving capital to the farmers is important in the study area in order to facilitate their activities.

4.6.4 Insufficient training to the local institutions

This is also among of the problems that face local institutions in the study area. This problem is caused by lack of enough extension officers who could provide training to the farmers. As for other groups which were not strong that were found in Kwalei it was said that other than the training which they received from the local institutions pioneers during their existence, they have never received any training after their departure.

For the institutions that were receiving training, many of them argued that the training provided to them by the extension officers was not satisfactory due to the reason that this training was sometimes given once a year or sometimes a year might pass without any training to the farmers. Table 14 shows the responses of the farmers on training provided to them whereby 96.7% argued that the training was unsatisfactory and only 3.3% indicated that the training was satisfactory. The training carries subjects such as land management technologies, importance of working with local institutions and crop rotation.

Table 14: Farmers response on training provided (n=60)

Response	Frequency	Percent
Satisfactory	2	3.3
Not satisfactory	58	96.7
Total	**60**	**100**

This imply that quantitative scaling up is important due to the fact that in quantitative scaling up a well staffed and well funded outside agency is among of the things that should be done and therefore outside agents will provide trainings when needed and good staff who are capable of providing trainings can do that as well, by doing that the problem can be reduced if not removed.

4.6.5 Lack of markets for their produce

The marketing system has not reached a point where every farmer can sell at a good and fair price. This is another problem which farmers face and which hinders the production activities. During the study it was discovered that most of the produce of farmers lack markets because many of the farmers tend to sell their products only up to the district level. Table 15 below shows the responses of farmers with respect to the main consumers of their produce, 45.0% said that the main consumers of their products are the people in the district 33.3% the people in the Ward and 16.7% the people in the village and only 5.0% are sold outside the district.

Table 15: The main users of the farmers products (n=60)

Customer of products	Frequency	Percent
People in the village	10	16.7
People in the ward	20	33.3
People in the district	27	45.0
People in the region	3	5.0
Total	60	100

To go to scale and strengthening local capacity for innovation is as important as the technologies themselves (Gonsalves, 2001). In many cases, local organizations do not achieve their objectives because they cannot develop their potential for self management (leadership, direction, execution, and planning). This is because of the lack of internal building capacities, especially for developing complex innovations, such as tools for soil management and dealing with markets, among others. To overcome these weaknesses, capacities for adoption must be developed within the institutions and in local communities (Carol and Feming, undated). Therefore, leadership, direction, execution and planning can be considered as the main factors which can influence scaling- up of the local institutions in the study area.

4.7 Factors that Influence Scaling up of Local Level Institutions

For scaling up of the local institutions to be carried out in the study area, there was a need to identify different factors that influence scaling up of the local institutions. Among the factors identified include the following.

4.7.1 The extent and impacts of the adoptation of land management technologies to the farmers

Working with local institutions in the study area has been of advantage to the farmers. Farmers were observed to be able to apply land management technologies, during the study almost every individual farmer was observed to adopt at least one or more of the technologies that were taught to them. The extent of adoption was measured as being very good, good or satisfactory where Table 16 below shows that among of the 60 respondents who were interviewed 6 (10.0%) were observed to apply more than three technologies to their farms which was assessed as a very good, followed by 16 (26.7%) who were observed to apply more than one technology and used as good. Satisfactory adoption was 38 (63.3%) of the interviewed respondents who applied only one technology.

Table 16: Extent of adoption of the land management technologies (n=60)

Extent of adoption	Frequency	Percentage
Very good	6	10.0
Good	16	26.7
Satisfactory	38	63.3
Total	60	100

One of the achievements attained includes increase soil in production of different crops which has been caused by increase in fertility. Soil fertility has improved due to the application of different land management technologies which were introduced to the farmers in the study area.

The increase in production has caused increase in economic status of the farmers in Lushoto district due to the reason that land management technologies has enabled them to have an increase in production.

4.7.2 Leadership of local institutions in the study area

During the study some of the local institutions were found to have strong leadership especially the ones that are found in Migambo village which includes Tamilwai, Tamilwai, Tozesahi, Mapambano and Mwelekeo and Baga village which includes Nguvukazi and Jitegemee (a). Strong leadership, influences scaling up of these local institution since they indicate sustainability of the institutions. Good leadership provides information on the internal capacities of local institution which ensures that any assistance which might be given to them either financially or technically will be properly used and improve their performance due to good leadership. In this context, good leadership may be defined as the ability of the leaders of the local institutions to facilitate, harmonise, sensitize and handle the ongoing activities of the institutions in attaining their objectives. Fox (1992) argued that the texture of informal social relations between leaders and members can be very revealing, as hierarchies are produced through ordinary daily activities.

4.7.3 Direction of the local institutions identified

Direction is an important element which can influence scaling-up of these local institutions. In looking at the directions of the local institutions factors to be considered include the vision and mission and the ability of the local institutions to attain their objectives. Through direction, one can measure the sustainability and

performance of the local institution. In the study area, local institutions studied were observed to have a good direction which ensures sustainability and shows a good performance of these local institutions. The performance has been observed in increasing production, increasing soil fertility and as well as creating unity among the members of local institutions. This becomes an influence for scaling up these local institutions to increase their impact. A good example was observed in Migambo village and from Baga village where local institutions which were found to be strong and cooperative were found.

4.7.4 Implementation and planning of the identified institutions

Number of local institutions available in the study area can also be one of the factors for scaling up because number of local institutions show that many people can be involved in different activities through their institutions. Local institutions which were identified in the study area include the ones in Migambo village, Baga village and Kwalei village. Future plans of the local institutions in the study area are the factors for scaling up these local institutions. Among of the future plans that the researcher identified during the study within different local institutions includes the intention to ask for extension officers from the district agriculture department which is in a plan of Tamilwai as one of the local institutions found in Kwai ward, and inviting other members to join the institution. The objectives of setting up these groups have been achieved by the groups, such objectives includes the adoption of the technologies that they were taught therefore it is high time that the scope of performance of these groups should be widely increased so that they can help other areas such as the whole district, region and the country in general.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The overall aim of this study was to determine the feasibility for scaling up local level rural institutions for sustainable land management in Lushoto district with the view of providing suggestions and recommendations if it is feasible to scale up these local institutions or not.

This chapter summarizes the conclusions and recommendations derived from the study. The study revealed that it is feasible to scale up the local institutions in the study area. For the purpose of convenience and easy interpretation, major conclusions are summarized and organized around the study objectives as laid down in the first chapter which is also in line with the way the results were presented.

i. There is existence of local institutions with their characterization as referred to appendix five in the study area which comprise farmers as the members and these have well pronounced roles in the management of land.

ii. Local institutions in the study area perform different roles in order to ensure that they meet their objectives. The roles include supporting training to the farmers, resource mobilization and planning.

iii. Local institutions in the study area were recognized to have achievements as well as challenges in performing their duties. Such achievements include creating awareness on land management to the community, increasing

production and livelihood of the members and creating unity among the small holder farmers while the challenges include lack of capital, insufficient training to members, and lack of market and high prices of agricultural inputs.

iv. There are number of factors that influence the scaling up of the local institutions which were determined in the study area such as extent and impacts of the adoption of land management technologies by the farmers. leadership within local institutions in the study area and directions of the local institutions, these factors influence scaling up of the local institutions due to the fact that, the factors indicate the presence of sustainability of the institutions

5.2 Recommendations

In the light of these conclusions, the following recommendations are made which should help planners, policy makers and development agencies in their efforts to bring about rural development through working with local institutions as an entry point.

i. The identified local institutions should be given enough ability to work with many members so that a number of farmers who work with local institutions can increase which will be of advantage not only to members but to the local community at large because the majority identified local institutions were recognized to have few members. Increasing the number of members in the local institutions will increase the impact of the technologies to many people

and therefore large number of people who will be positively affected by working with the local institutions will increase.

ii. Creating ability to perform the roles to the local institutions is important and can be done through providing training to leaders on leadership skills which will create strong and capable leaders in the institutions and training to farmers in order to increase their performance on land management.

iii. Local institutions should be given ability on how to look for markets for their products, since among of their achievements include increasing of production due to newly introduced land management and farming technologies. On the other hand lack of markets is a challenge that faces them, so the presence of the markets will enable them to produce more which will increase farmers' income and hence good life standard. This is another area where scaling up of the local institutions can be taken into consideration.

iv. Different methods of land management should be created to facilitate the active involvement and participation of all concerned, particularly communities and people at the local level, in decision making on land use and management such as land management technologies where scaling up of the local institutions can be done according to the existing farming system.

v. Scaling up can be done by recruiting extension staff to work with the local institutions, organizing workshops which will aim at providing training to the farmers with reference that insufficient training is among of the challenges

that face the local institutions; this will help in increasing knowledge to the farmers. These extension staff will facilitate organization, reporting and briefing development partners and other stakeholders on activities that proceeds within the institutions.

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APPENDICES

Appendix 1: Interview guide

This study is based at Lushoto District. Its major objective is to conduct a feasibility study of scaling up local level rural institutions for sustainable land management; the case of Lushoto District. Therefore, you are kindly requested to participate in this interview.

1. How many local institutions do exist in this area?
2. Do they have special names?
3. How many members does each local institution has, by gender?
4. When were they established?
5. What are the responsibilities that the institutions have towards land management?
6. What is the institution's geographical coverage in its activities on Land management?
7. What are you able to do that relate to land management?
8. In ensuring land management what are the activities that the organization perform?
9. Since the establishment of the institution what are the achievement that the institution was able to achieve?
10. What are the challenges that the institutions face in trying to perform its roles?
11. What recommendations can you make to strengthen your capacity?
12. In what ways can your institutions be scaled up?

13. What do you think can be done to improve your performance on Land management?
14. What are the challenges that you think they are of long term on your performance?
15. Are there any new technologies that you are using in farming system which helps in conserving land?
16. Do the institutions help in improving income of the members of the institutions?
17. Can you differentiate the income of the members before and after the formation of the institutions?
18. Does the Technologies adopted helps in increasing the production of the members of the institutions?
19. Are there any policies that have been formed or reformed that favour the performance of the institutions?
20. How many?

Appendix 2: Checklist

This study is based at Lushoto District. Its major objective is to conduct a feasibility study of scaling up local level rural institutions for sustainable land management; the case of Lushoto District. Therefore, you are kindly requested to participate in this interview.

1. Is there any local institution which deals with land management which exist in your area?
2. When was it established?
3. How many members does the institution has?
4. Does the institution has any achievements?
5. What are the achievements of the institutions?
6. Does the institution face any problem?
7. What are the problems?
8. What is the institution's geographical coverage?
9. What are your roles?
10. In what ways can your institutions be scaled up?
11. Do the institutions help in improving income of the members of the institutions?
12. Are there any new technologies that you are using in farming system which help in conserving land?

Appendix 3: Questionnaire

This study is based at Lushoto District. Its major objective is to conduct a feasibility of scaling up local level rural institutions for sustainable land management. Therefore, you are kindly requested to participate in this study by filling this short form.

Name of the Ward	
Village	

1. Please indicate your age by placing a tick in the appropriate category.

( ) Below 25 years ( ) 46- 55 years

( ) 25- 35 years ( ) Above 55 years

( ) 36- 46 years

2. Sex of the Respondents.

( ) Male

( ) Female

3. What is your current level of formal Education?

( ) Non ( ) College Certificate

( ) Primary Education ( ) First Degree

( ) Ordinary Secondary Education ( ) Masters Degree

( ) Advanced Secondary Education ( ) College Diploma

( ) Doctor of Philosophy

4. What is your source of income?

( ) Employment ( ) Famer

( ) Business man/ woman ( ) Other (specify).....

5. Are you a member of any local institution which deals with land management?

( ) YES

( ) NO

6. If YES what is the name of the institution?

.....

7. How would you categories your average annual income?

( ) Under 500 000/-

( ) 500 001 to 2 000 000/-

( ) 2 000 001 to 4 000 000/-

( ) 4 000 001 to 6 000 000/-

( ) 6 000 001 to 10 000 000/-

( ) 10 000 001 +

8. How many members are there in your institution?

( ) 1-20 members

( ) 21-40 members

( ) 41-60 members

( ) Above 60

9. What are the activities done by the institutions?

( ) Planting trees for land management

( ) Providing education concerning land management

( ) Facilitating sustainable agriculture

( ) Helping the famers on the adaptation of new farming technologies

Others please specify .....

10. Does your institutions face any problem in performing the duties?

( ) yes

( ) no

11. If yes which are they?

( ) .....

( ) .....

( ) .....

12. What are the achievement of your institutions if any?

( ).....

( ) .....

( ) .....

THANK YOU FOR YOUR CONTRIBUTIONS

Appendix 4: Questionnaire for Production and Income trend

S/N	Type of crop grown by the respondent	Production before the introduction of land management technologies	Production after the introduction of land management technologies	Income before the introduction of land management technologies	Income after the introduction of land management technologies
	1.....				
	2.....				
	3.....				
	4.....				
	5.....				
	1.....				
	2.....				
	3.....				
	4.....				
	5.....				
	1.....				
	2.....				
	3.....				
	4.....				
	5.....				

	1……..				
	2……..				
	3……..				
	1……..				
	2……..				
	3……..				
	4……..				
	5……..				
	1……..				
	2……..				
	3……..				
	4……..				
	5……..				
	6……..				

Appendix 5: Characterization of the local institutions

Local institution	Ward/village	No. of members	Objectives of the Local Institutions relating to land management	Year formed	Institutional Pioneers	Geographical coverage	Constitution	Registration status	Networking
Tamilwai	Kwai	43	Tree planting, conducting meeting with the members, looking for market of the farmers products, livestock keeping, protection of water sources and ensuring seeds distribution	2007	AHI	Within the Ward	Yes	District level	MVIWATA
Tozeshai	Kwai	30	Tree planting and conducting meeting with the members	2004	AHI	Within the Ward	Yes	Village level	MVIWATA
Mapambano	Kwai	30	Tree planting, conducting meeting with the members, looking for market of the farmers products, livestock keeping, protection of water sources and ensuring seeds distribution	2004	AHI	Within the Ward	Yes	Village level	MVIWATA
Togolai	Kwai	30	Looking for market of the farmers products, livestock keeping, protection of water sources and ensuring seeds distribution	2008	AHI	Within the Ward	Yes	Village level	MVIWATA

Dira	Kwai	30	Tree planting and conducting meeting with the members	2010	AHI	Within the ward	Yes	Village level	MVIWATA
Mwelekeo	Kwai	30	Tree planting and conducting meeting with the members	2010	AHI	Within the ward	Yes	Village level	MVIWATA
Kundanai	Kwai	30	Tree planting, conducting meeting with the members, and looking for market of the farmers products	2008	AHI	Within the ward	Yes	Village level	MVIWATA
Upendo	Mamba	24	Tree planting	2006	AHI	Within the village	Yes	Village level	Village networking
Jitegemee	Mamba	24	Community sensitization on the application of land management technologies	2006	TIP	Within the village	Yes	Village level	Village networking
Kiwakama	Mamba	10	Tree planting, Community sensitization on the application of land management technologies	2006	AHI	Within the village	Yes	Village level	Village networking
Jitegemee (a)	Baga	23	Tree planting	1996	SECAP	Within the ward	Yes	Village level	MVIWATA
Nguvu kazi	Baga	47	Tree planting, conducting meeting with the members, and looking for market of the farmers products	1999	SECAP	Within the Ward	Yes	District level	MVIWATA
Jitegemee (b)	Baga	22	Tree planting and Community sensitization on the application of land management technologies	1996	SECAP	Within the Ward	Yes	Village level	MVIWATA