LAND ACCESS, LIVELIHOOD STRATEGIES, AND RURAL HOUSEHOLDS' WELL-BEING IN MVOMERO DISTRICT, TANZANIA

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A THESIS SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY OF SOKOINE UNIVERSITY OF AGRICULTURE. MOROGORO, TANZANIA.

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EXTENDED ABSTRACT

Arable land scarcity and inefficient livelihood strategies are Sub Saharan Africa phenomena posing a challenge of rural chronic poverty in the 21st Century. This study analysed the link between land access, livelihood strategies (LS) and household well-being (HWBS) in land scarce areas, Mvomero District, Tanzania. Specifically, it determined: land access and associated factors, effect of land access on LS, influence of LS on HWBS and the impacts of land access on HWBS. A cross-sectional research design was adopted whereby a survey was conducted involving 267 households. In addition, focus group discussions and key informant interviews were conducted. Qualitative results demonstrated that the majority of households lacked secure access to land. While lack of irrigation schemes hindered land access in densely populated areas by discouraging settlement in land abundant villages, land grabbing perpetuated by weak tenure security, monetary poverty and non compliance to land laws limited land access in land abundant villages. In addition, there was high interdependency between farm and non-farm strategies but lack of capital for undertaking high paying LS confined households to survival strategies. Binary and multinomial logistic regression results indicated that income, productive assets and location had a significant influence ($p < 0.05$) on land access. Furthermore, distance to farm and number of plots demonstrated a significant influence on non-farm LS. Moreover, land size and location exhibited the highest influence on the likelihood for a household to be well-off followed by LS diversification, and number of dependants. It is concluded that, land grabbing and lack of irrigation water lead to insecure access to land which in turn force households to venture in irrational LS as they lack inadequate capital for meaningful diversification of LS thus, failure to

attain well-being. Furthermore, female headed households and those possessing many dependants are disadvantaged in attaining well-being. Tanzania government is advised to enforce adherence to land laws and invest in irrigation infrastructure in migrants' destinations to enhance secure access to land. It may possibly facilitate access to skills, savings and credit to augment rational diversification of LS while paying special attention to female headed households and those with many dependants.

DECLARATION

I, Patricia Mwesiga Lyatuu, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

_____ _____

Patricia Mwesiga Lyatuu Date

(PhD Candidate)

The above Declaration is confirmed

_____ _____

Dr. Justin K. Urassa Date

(Supervisor)

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and guiding the household survey. Lastly, but not least, I thank all respondents for devoting their valuable time to participate in this study.

DEDICATION

This work is dedicated to all rural dwellers faced with arable land scarcity and especially the landless and ailing households. To the implementers of Tanzania Land Policy and all development agencies striving to ensure equitable secure access to land among the rural poor.

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Paper 2: Land Access and Livelihood Strategies in Mvomero District Tanzania. Patricia, M. Lyatuu[1] and Justin, K. Urassa[2]. Published in the International Journal of Physical and Social Science 2015; 5 (3): 256-276

Paper 3: Impact of Livelihood Strategies on Household Well-Being in Land Scarce Areas: Evidence from Mvomero District, Tanzania. Patricia, M. Lyatuu[1] and Justin, K. Urassa[2]. Accepted by *Ufahamu: A Journal of African Studies*. Vol. 40. Issue 2 (Feb/March, 2016).

Paper 4: Land Access, Livelihood Strategies and Rural Household Well-being in Mvomero District, Tanzania. Patricia, M. Lyatuu[1] and Justin, K. Urassa[2]. Accepted by the Journal of Natural Resources and Development.

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DECLARATION

I, **Patricia Mwesiga Lyatuu**, do hereby declare to the Senate of Sokoine University of Agriculture that the papers listed on the previous page which make this thesis summarize my independent efforts, it is my original work and will not be part of another thesis in the “published Papers” format in any other University.

LIST OF APPENDICES

LIST OF ABBREVIATIONS AND ACRONYMS

CCRO	Certificate of Customary Right of Occupancy
DFID	Department for International Development
DSI	Development Studies Institute
FGD	Focus Group Discussion
FHHs	Female Headed Households
GDP	Gross Domestic Product
HBS	Household Budget Survey
HWBS	Household Well-being Status
KI	Key Informant
LS	Livelihood Strategies
NBS	National Bureau of Statistics
NCEE	National Commission for Economic Empowerment
NGO	Non Governmental Organizations
NLP	National Land Policy
NSGRP	National Strategy for Growth and Reduction of Poverty
PCA	Principle Component Analysis
REPOA	Policy Research for Development
SLA	Sustainable Livelihoods Approach
SLF	Sustainable Livelihoods Framework
SPSS	Statistical Package for Social Sciences
SUA	Sokoine University of Agriculture
UNDP	United Nations Development Programme
UNR	Uluguru Nature Reserve

URT	United Republic of Tanzania
USD	United States Dollar
VLA	Village Land Act

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Land is a key asset which rural people use to make a living and a capital asset offering opportunities for social and economic empowerment (Quan, 2006; Vermeulen and Cotula, 2010). Access to land is defined in this thesis as the various ways through which land users gain, control and maintain it including structural, relational and right based mechanisms. It is a basis for shelter, for access to services and for civic and political participation. In addition, it can also provide a source of financial security furnishing collateral to raise credit, as a transferable asset which can be sold, rented out, mortgaged, loaned or bequeathed hence contributing to well-being (Lugoe, 2008). According to Boserup (2005), the economic revolutions in countries such as China and Japan have revealed that land access is not a solution to rural poverty due to an increase of non-farm opportunities. Despite the success stories on industrial revolution from China and Japan, worldwide, land remains to be a key asset in developing countries (Quan, 2006). Likewise, arable land is a key asset among rural Tanzanians because the industrial sector has not developed to the capacity of absorbing rural workers (Coulson, 2011; Lugoe, 2010).

Generally, land access has become a greater global concern since the food price crisis of 2007 (Correll, 2009). For example, though countries such as the Persian Gulf States, China, South Korea and India are rich in capital, they do not have sufficient farm capacity to feed their populations. Hence, they have become major land hunters. Apart from the food price crises, other factors such as the current

adversity of climate change has increased the need for more land to be put under conservation, thus reducing the size of arable land from neighbourhood villagers (Lopa *et al.,* 2012; Borras Jr *et al.,* 2011).This calls for efforts to empower rural people to access land for sustainable livelihoods (African Union, 2009). In this regard, various local and international initiatives are being implemented to enhance rural poor's access to land. For example, in 2010 the International Land Coalition (ILC) in its efforts to monitor secure access to land developed five indicators of access to land. The indicators are: (1) distribution or concentration of land ownership; (2) land use rights; (3) landlessness, homelessness and squatting; (4) land grabbing; and (5) affordability of land and housing (Bending, 2010: 26). Based on the above indicators, IFAD (2012) proposed four interventions to ensure secure access to land; (1) Increasing the size of land accessed by the poor, (2) improving the means through which the poor access land, (3) enhancing tenure security (4) promotion of non-farm activities to complement farm income. Depending on the context, the implementation of the above strategies may need to be either mutually inclusive or exclusive. This point to a need for empirical evidence on access to land by the poor, the opted livelihood strategies and the consequent well-being among communities facing scarcity of arable land to guide appropriate decision on appropriate match of poverty interventions.

According to Tanzania's land policy, all citizens have equal and equitable access to land (URT, 1997). However, land scarcity in rural areas of Tanzania is a recent phenomenon and is engineered by the money economy, conservation policies, population growth and land degradation (Madulu, 2004; Giliba *et al.,* 2011; German

et al., 2013). Data on agriculture and development show that the proportion of arable land per person in the country decreased dramatically between 1996 and 2010. For instance, while the arable land per person remained 0.4 hectares from 1981 to 1995, it decreased to 0.3 hectares per person for the period between 1996 and 2004, and dropped further to 0.2 hectares per person from 2005 to 2010 (World Bank, 2012). In addition, the population density in Tanzania is extremely uneven; varying from 1 person per square kilometre in arid regions to 51 people per square kilometre in highly fertile areas. In some well-watered highlands such as the villages adjacent to the Eastern Arc Mountains, it goes above 240 people per square kilometre (URT, 1997; NBS, 2013). This is because weather in the villages is favourable for majority of crops hence, attracting many farmers. At the same time the villages are the targets of conservation programmes which in-turn reduces arable land thus creating high pressure on land. For example in 2008, farmers were evicted from their former farms to give way for development of Uluguru Nature Reserve (Nyenza *et al.*, 2013).

Tanzania's population has grown from 34.4 million in 2002 to 44.9 million in 2012 with the growth rate of 2.7 (NBS, 2013). Madulu (2004) argues that high rate of population growth contributes to increased pressure on land, high demand for essential resources and services from the natural resource pool. These might be a cause of persistent poverty among small scale farmers who also dominate the agricultural industry in Tanzania. Yet, agriculture remains the foundation of the Tanzanian economy, contributing about 22% of the Gross Domestic Product (GDP) and providing livelihoods for about three-quarters of the households in the country (NBS, 2014). The industry is also identified by the National Strategy for Growth and

Reduction of Poverty (NSGRP II) as an important driver of overall macro-economic growth due to its inter-linkages and multiplier effect with other sectors of the economy like manufacturing and trade (URT, 2010).

Despite the fact that Tanzania's small scale farmers contribute greatly to the national economy, the rates of basic needs (33.3%) and extreme poverty (11.7%) among them are higher compared to the basic needs poverty rate of 21.7% and food poverty rate of 8.7 % in urban areas (NBS, 2014). Furthermore, 84.1% of the poor people live in rural areas. Moreover, NBS (2014) reported that while the poverty gap in urban areas is 5.5 %, it is 7.9 % in rural areas, meaning that the populations living in rural areas are farther away from the poverty line. Despite the fact that rural poverty is a challenge in many areas of rural Tanzania, it is critical within villages bordering nature reserves especially the Uluguru Nature Reserve. This is attributed to the fact that the dwellers faced eviction from their former farms to give way for the development of the reserves. Recent studies have reported that the evicted farmers were left unable to switch to high paying livelihood strategies (Kusiluka *et al.*, 2011; Nyenza *et al.*, 2013).

This study uses the term well-being to encompass various indicators of poverty with a sense that poverty goes beyond the lack of income or other monetary measures as pointed out in literature (Chambers, 1997; Nega, 2008). Literature also suggests that, the use of well-being, a wider concept that connects and covers various issues of poverty help to avoid confusion on defining and addressing poverty arising from the existing wide debate on its wide types, dimensions and dynamics (Urassa, 2010).

With this regard, development agencies adopted the sustainable livelihood approach (SLA) among others to enhance progress in poverty elimination after decades of limited success in eliminating poverty focusing on material and income poverty only (Chambers and Conway, 1992). Based on the SLA various development agencies have developed and used sustainable livelihood approach (SLF) to guide planning, implementation and evaluation of development programmes to suit their respective purposes. However the heart of SLF is the relationship between assets-livelihood strategies and well-being.

Among the developed frameworks relative to the SLA, is the DFID's 1999 sustainable livelihoods framework (SLF). The core of the framework like others stresses an understanding of people's priorities, the strategies they adopt in pursuit of their priorities and their access to resources for effective focus of poverty interventions. This framework helps to capture a wide range of drivers and consequences of poverty (Ashley and Carney, 1999). With that respect addressing poverty among survivors of land scarcity necessitate an understanding of the existing relationship between accesses to land-pursued livelihood strategies- well-being. This is because land is the key asset for rural peoples' livelihoods. Arguing in the same direction, Scoones (1998) pointed out that farm households need a certain level of access to natural resources to be able to undertake their livelihood strategies adequately and attain well-being. This implies that an empirical understanding of the above relationship provides a good picture on the existing negative livelihood aspects that need to be suppressed and the positive ones that could be promoted for enhancing progress in realizing well-being.

Based on the above facts, the study considered that Tanzania's chronic rural poverty especially in the villages bordering Uluguru Nature Reserve in Mvomero District might be contributed by inadequate land access coupled with unavailability of livelihood strategies to supplement farm income. The fact that land is increasingly becoming a scarce resource and small-scale farmers remain chronically poor raises the following questions: (1) how do small-scale farmers' access arable land and what are the associated factors? (2) How do small-scale farmers make a living in the midst of land scarcity? (3) What is the implication of land access and the pursued livelihood strategies on rural households' well-being in land scarce areas? The questions necessitated the empirical analysis to understand the link between; access to land, ventured livelihood strategies and household well-being in the villages where land is in short supply, hence this study.

1.2 Problem Statement and Justification for the Study

1.2.1 Problem statement

Tanzanian government, through its National Strategies for Growth and Reduction of Poverty (NSGRP 1 and 2), has been addressing rural poverty through enhancing secure access to land and promoting diversification of livelihood strategies (URT, 2005; 2010). The main goal is to contain poverty linked to degradation while complementing farm income. This is because farming alone has proved to be unable to provide enough income for rural households to attain well-being (Ellis and Freeman, 2004). The main strategy to prevent degradation has been to put more land on conservation (Lopa *et al.*, 2012). However, conservation policies coupled with fast population growth have created land scarcity in villages bordering nature

reserves (URT, 1997; Kusilika *et al.*, 2011). At the same time Tanzania's industrial sector and other sectors of the economy including the developed conservation projects do not have the capacity to absorb the extra rural labour force (Lugoe, 2010; Coulson, 2011). As such, ill-being has remained a rural phenomenon whereby 84.1% of rural population is living in basic needs poverty (NBS, 2014). The situation is worse in the villages bordering the nature reserves especially those whose people faced eviction from their former farms to pave way for the development of reserves.

Similarly, access to land and meaningful employment in the villages adjacent the Uluguru Mountains in Mvomero District is a challenge and peoples' well-being is not realized. For instance, WWF *et al.* (2007) pointed out that the majority of dwellers of the villages adjacent to the Uluguru Nature Reserve (UNR) were living below the income poverty line of 1.25 USD per day with most of their houses roofed with leaves, the walls made of mud and poles, and about half of them being considered very poor. In addition, Kusiluka *et al.* (2011) and Nyenza *et al.* (2013) reported that the above mentioned communities could not organize meaningful employments after being evicted from their former farms to give way the development of the Uluguru Nature Reserve (UNR). According to WWF *et al.* (2007), 90% of the mentioned communities are farmers; hence secure access to arable land is vital for their well-being.

The Tanzanian government, through the Land Policy of 1997 and the Principal Land and Village Land Acts of 1999, has been addressing the problem of rural land scarcity by encouraging resettlement from land scarce areas to areas of low

population density (URT, 1997; 1999a; 1999b). Despite the government's efforts, survivors of land scarcity within the villages adjacent the UNR have been obtaining additional land through migrating on a seasonal basis, farming on differently located plots and travelling long distances to farms (Ponte, 2001; Nyenza *et al.,* 2013). According to the theory of access (Ribort and Peluso, 2003), secure access to a resource is measured by structural, right and relational based mechanisms. Relative to access to land in the Tanzanian land administration and governance setting, the right and relational mechanisms that seemed to contribute to secure access to land among the studied communities include possession of formal land tiles and the relational mechanisms include land parcel patterns (URT, 1997; URT, 1999a; 1999b). This is attributed to the fact using land in seasonal basis as pointed out in the literature threaten their ability to possess formal rights of occupancy and use. In addition, possession of tiny portions of farms some of them scatters or located far from home poses a concern of limiting their ability to benefit from land hence reducing the security of their access to land.

There is therefore, a high possibility that insecure access to land contributed to their chronic ill-being because the dwellers lack alternative employments to complement the declined farm income. In addition, it is argued by the pioneers of sustainable livelihood framework that a meaningful access to arable land remains essential for vibrant rural livelihood strategies which in turn favour the achievement of rural dwellers' well-being (Ashley and Carney, 1999). The above facts substantiated a need to obtain empirical knowledge on the status of access to land among the above mentioned villagers, the extent to which their access to land influences their choices

of livelihood strategies and ultimately their well-being. Therefore, this study was conducted to examine the link between access to land, livelihood strategies and households well-being in rural land scarce areas of Tanzania with special attention to the villages adjacent to the Uluguru Mountains.

1.2.2 Justification for the study

The Tanzanian government is committed to realize the Millennium Development Goal I (MDG 1) of halving the proportion of people living in extreme poverty by 2015. Through its National Strategies for Growth and Reduction of Poverty (NSGRP I and II) the government targeted to reduce the proportions of rural basic needs poverty from 38.6% in 2000/01 to 24% in 2010 under the GDP growth targets of 6-8%. Though the GDP growth rate had been 7% throughout (URT, 2005: 40), basic needs poverty decreased to 37.6% from 2000/01 -2007 (URT, 2010) and to 33.3% from 2007 to 2012 (NBS, 2014). This indicates slow progress in attainment of Government's targets.

To realize the above targets, among others the NSGRP I and II, have been focused at:

i. Reducing income poverty through promoting inclusive, sustainable and employment enhancing growth and development through undertaking further land reforms to support access and expansion of land for agricultural development and protecting use of designated areas, while balancing the demands for large and small scale uses. In line with this, the National Land Policy (NLP) of 1997 has been addressing rural land scarcity through

encouraging people in land scarce villages to settle in land abundant villages; and

ii. Addressing underemployment in rural areas through establishing production clusters and promoting non-farm income generating activities (URT, 2010).

Despite the above mentioned efforts, farmers in land scarce areas especially within villages adjacent the Uluguru Mountains in Mvomero District fail to settle in land abundant villages. They are also unable to diversify livelihood strategies meaningfully (Ponte, 2001; Nyenza *et al.*, 2013). Consequently, households have been pushed further into poverty. Empirical evidence as to why those seasonal migrants fail to settle in the villages of their destination and the constraints to their rational diversification of livelihood strategies is not readily available. Such information could better guide the review of NSGRP II and the implementation of the NLP for attainment of the above targets.

This study was therefore, important and timely to generate empirical understanding of the problem, including the reasons for households to prefer distant farming above settlement in land abundant areas, their deficiency relative to rational diversification of livelihood strategies on which to base the review of NSGRP II and the implementation of the NLP. The findings of this study also provide necessary information to guide the appropriate match of the interventions aimed at ensuring secure access to land and effective livelihood strategies among the rural poor. The proposed strategies as reported by IFAD (2012) include; increasing the size of land accessed by households, improving tenure security and promoting diversification of

livelihood strategies. According to Bending (2010), availability of such information is a challenge, especially in developing countries including Tanzania.

1.3 Objectives of the Study

1.3.1 Main objective

The overall objective of this study was to examine the effects of land access on rural livelihood strategies and its implication for household well-being in land scarce areas of Mvomero District, Tanzania.

1.3.2 Specific objectives

The specific objectives of the study were to:

i. Determine rural households' land access and the associated factors
ii. Analyze the effects of land access on the choice of livelihood strategies
iii. Determine household well-being based on studied communities' indicators of well-being and its relationship with the pursued livelihood strategies
iv. Determine the impact of land access and livelihood strategies on a household's well-being based on the variables of land access and those of livelihood strategies

1.4 Research Questions

i. How do rural households gain, control and maintain arable land in land scarce areas?
ii. Do small-scale farmers in land scarce villages have secure access to land?

iii. How do household socio-demographic characteristics influence access to land?

iv. How do communities under study define well-being?

v. What is the household well-being status in the study area?

vi. Which land access variables influence the likelihood for a household to pursue particular types of livelihood strategies?

vii. What types of livelihood strategies are associated with a household's well-being?

viii. Which land access variables influence the likelihood for a household to be well-off?

ix. Which of the independent variables impact mostly on a household's well-being?

1.5 Study's Hypotheses

i. The livelihood strategies adopted by households did not vary with variation of access to land.

ii. The odds of attaining well-being are the same among households venturing in different livelihood strategies.

iii. The odds of attaining well-being are the same among households accessing land in different ways and undertaking varied livelihood strategies.

1.6 Theoretical Framework and Empirical Literature

Two theories guided this study: (1) the sustainable livelihood framework (SLF) and the access theory. While the SLF provided a comprehensive structure for the entire

planning and implementation for achieving the goal of this study, examining how rural households access arable land, its influence on types of pursued livelihood strategies and the implications for household well-being in land scarce areas. The access theory guided the analysis of land access. This is because, although the SLF emphasizes on the importance of access to assets for successful pursuit of LS to attain livelihood priorities, it lacks the details of resource access analysis.

1.6.1 Sustainable livelihoods framework

The origin of sustainable livelihood as a concept is widely attributed to Chambers and Conway (1992:4) in their efforts to respond to diverse realities of most rural life. Chambers and Conway presented the sustainable livelihood approach (SLA) as a link of the three existing concepts of capability, equity and sustainability. They emphasised social and environmental dimensions and offered a working definition of sustainable livelihood:

> A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long-term (Chambers and Conway, 1992: 7).

Building on Chambers and Conway's work, various international development stakeholders have been using the SLA to operationalize sustainable livelihood

frameworks to suit their goals. For example, in 1993 Oxfam employed the sustainable livelihood framework (SLF) in formulating its overall aims, improving project strategies and staff training through encouraging participation (Neefjes, 2000). Furthermore, CARE improved the framework in 1994 to include cultural relations to fit its need to address gender issues in its efforts to achieve household livelihoods security in relief and development work. The UNDP also adopted the SLF to serve as both a conceptual and programming framework for poverty reduction (Roe, 1998; Helmore and Singh, 2001). Generally, the heart of SLF in all agencies has been a link between asset – livelihood strategies – livelihood outcomes (Carney and Britain, 2003; Solesbury, 2003; Small, 2007).

The SLF considers that different LS have different asset requirements but the general principle is that those sufficiently endowed with assets are more likely to be able to make positive livelihood choices (Carney, 1998). This implies that they can choose from a range of options in order to maximize their achievement of well-being rather than being forced into any given strategy as the only option. Most of rural people's LS are based on a certain type and level of natural capital which also is derived from land (Bending, 2010; IFAD, 2012). Although the SLF does not rank assets in terms of importance, it describes two important types of relationships between assets: (1) sequencing, or the degree to which the acquisition of one asset enables the acquisition of another, and (2) substitution, or the degree to which particular assets can be substituted for others (Scoones, 1998). Land is a key asset for rural livelihoods because of its primacy in asset sequencing. Land secured households may be more likely to invest in conservation projects, or use it as collateral to access

financial capital and use the latter to enhance their human capital through investing in childrens' education. Further to the above, through owning land, a household's social status is dignified enabling it to benefit from greater social capital (Worku and Mekonnen, 2012).

This study considered arable land as a natural resource base and a dominant asset in sequencing other assets (Scoones 1998; Lee *et al.*, 2009). Hence, the study assumes that land has a high influence on rural household's ability to pursue meaningful LS, to access other assets and consequently to attain well-being. In that view the current study puts land at the core of livelihood assets, and assumes that different patterns of land access (size, distance and number of plots) have varied influences on the pursuit of LS and the ultimate achievement of well-being. Using the DFID's SLF (Figure 1) as a key reference, the analysis modified the assets-LS-outcome relationship, and centered on the relationship between land access-LS-well-being.

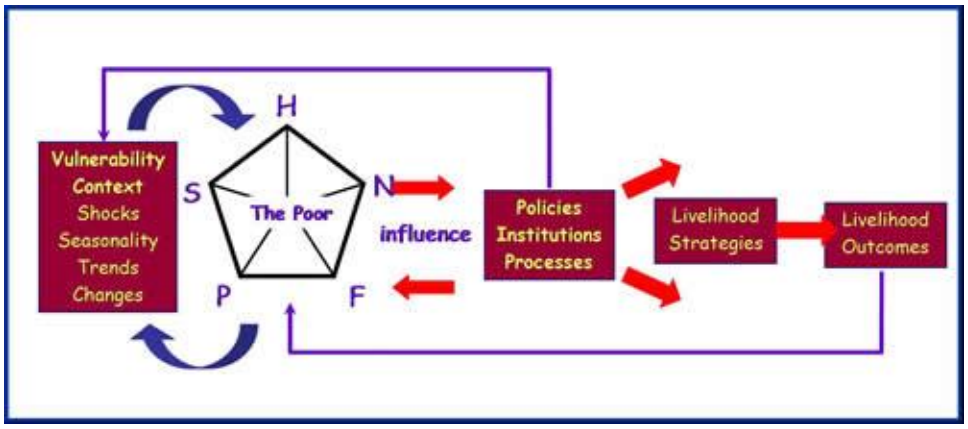

Figure 1: DFID SLF, Source: (IFAD, 2011)

Key: S=social capital, P = Physical capital, F – Financial capital, N =natural resource base, H = Human resource

The study admits the existence of several reviews which have taken place on the DFID's 1999 SLF but the original one provides adequate structure for capturing the required information for this study. It is also imperative to note that the heart of SLF is sufficient for the analysis under study, but DFID's SLF has been cited for clarity and clear focus. However, the analysis of policies and institutions is beyond the scope of this thesis.

The definition of the term livelihood strategies (LS) in this thesis is adopted from Ashley and Carney (1999: 23), which is: *the range and combination of activities and choices that people make/undertake to achieve livelihood goals including production and investment strategies*. LS have been classified according to different criteria. Scoones (1998) divided rural LS into three broad types according to the nature of activities undertaken: agricultural intensification and extensification, livelihood diversification, and migration. Consequently, this study grouped the LS into farming, non-farming and diversity of LS (combination of farming and non farming) based on the nature of livelihood activities undertaken in the study area. With this regard farming refers to all activities related to cultivation of crops and keeping of animals. Non-farming is the opposite of that. Diversification in this study is generally recognized as *the process by which rural households combine activities in order to survive and to improve their standard of living* as defined by Ellis (2000:1).

Moreover, the ability of a household to pursue a meaningful diversity of livelihood strategies depends on its assets endowment and its ability (in terms of socio-demographic characteristics) to combine them (Borras Jr *et al.,* 2011). Literature

(Ellis, 2000; Urassa, 2010; Nombo, 2010), underscores the influence of household demographic characteristics such as period of residence in a locality, location, household head's age, sex, education level and marital status, on its ability to access resources. According to Urassa (2010) and Nombo (2010), women in Sub-Saharan Africa, Tanzania included are deprived of access and control of resources, especially land. As a consequence, the majority of female headed households (FHHs) are disadvantaged in terms of ownership and control over livelihood resources, information and technology necessary for attainment of well-being (Godfray *et al.*, 2010). Married women, however, may access resources through their husbands. By doing so, they increase their progress in attaining well-being. In addition, Barrett *et al.* (2001) and Ellis and Freeman (2004) point out that households with high dependency ratio face difficulties in attaining well-being as they use most of their earnings in caring for and developing their large sized dependants. Furthermore, higher educational attainment enhances ability to adopt meaningful off-farm LS through developing labour skills.

Well-being; a component of livelihood goals, is a complex and multifaceted concept encompassing food security, good health, social security, material satisfaction, and freedom of choice (Chambers, 1997; Urassa, 2010). Therefore, no single definition can stand on its own to define "well-being". Chambers (1997) suggests that measuring of well-being should put first the reality of the poor people (subjective well-being) and make it count while also considering the professionals' reality (objective well-being). In the light of Chamber's postulation, the study adopted household well-being indicators as conceptualized in the study area and in

conformity with the Tanzania Rural Development Strategy. The indicators include: housing condition, food self provisioning throughout the year, ability to bounce back from shock without depleting assets (resiliency ability), ownership of assets, household characteristics, access to education, and access to sanitation (URT, 2001). The study considered the above mentioned indicators of well-being to be people's priorities which they strive to attain through the pursued LS using the accessed arable land.

The study was inspired by the DFID sustainable livelihood framework (SLF) which stresses the importance of understanding various livelihood components, including: the priorities that people identify; different strategies they adopt in pursuit of their priorities; the institutions, policies and organisations that determine their access to assets/opportunities and the returns they can achieve (well-being or ailing). The SLF also emphasizes on their access to social, human, physical, financial and natural capital, and their ability to put these to productive use; and the context in which they live, including external trends (economic, technological and demographic), shocks (natural or man-made), and seasonality (Ashley and Carney, 1999). The approach was found useful to guide the study in all phases of planning, data collection and analysis as it provides a comprehensive structure to help in attaining the main goal of this study; understanding the link between land access-livelihood strategies–wellbeing. Though the SLF emphasizes the need to understand the access to assets, it does not offer the grounds for analysing resource access. This necessitated the use of the access theory to guide the analysis of land access in this study.

1.6.2 The access theory

The access theory by Ribot and Peluso (2003) is grounded to the work by MacPherson (1978) who theorized access beyond the notion of property rights. According to Ribot and Peluso, access involves a wide range of mechanisms that can constrain or enable people to benefit from a resource including rights, structures and relations. The right based means of access are defined by law, custom and convention that shape who gains, controls and maintains the resource in question (Mac Pherson, 1978). Law based property rights include access via the holding of titles or deeds as well as permits and licenses (Tawney, 1978; Nelson, 1986). In Tanzania the right based access to village land at individual level can be confirmed by possession of certificate of customary right of occupancy (CCRO) (URT, 1997; 1999a; 1999b). In addition customary or conventional rights to a resource occurs via social acceptances of practice by which people gain benefits such as provision of labour on a resource including tilling land or clearing a forest (Weber, 1978). Moreover, access to knowledge such as land tenure system and procedures for obtaining formal land titles do shape all rights to occupy, use, and dispose land (Rwegasira, 2012).

Structural and relational mechanisms of access involve opportunities and constraints that mediate the ability to benefit from a resource established by political-economic and cultural frames within which access to resources is sought (Blaikie, 1985). Political frames that may govern land access include policies, Acts and institutions such as relevant Ministries, NGOs and committees. Economic frames associated with access to land by rural poor include methods of acquisition; and land parcel patterns

such as size, distance to farm, number of plots (Rabirou *et al.,* 2012). Patterns of farms such as scattered plots, slopping or long distance hinder the ability to benefit from land because the users waste time which could be invested in production through travelling to farm or guarding field crops (Rabirou *et al.,* 2012). Access to land is also sought within such cultural frames as inheritance and common regime. For example, male dominant and cultural practices which govern nearly 80% of the rural population discriminate women against ownership and control over land within patriarchal communities (URT, 1997; Lugoe, 2008). Social identity or membership in a community or group including grouping by age, gender, ethnicity, religion, status, profession, places of birth, common education or other attributes that shape social identity affect the distribution of land (Nombo, 2010).

According to the access theory it is understood that an absolute access to a resource such as land comprises a combination of rights, structures and relations. Furthermore, empirical evidence from the study area had confirmed that farmers obtain additional land outside their villages and some cultivate on varied located plots (Van Donge, 1992; Ponte, 2001; Nyenza *et al.,* 2013). Elsewhere, studies have demonstrated that while farm size has a positive influence on productivity, distance to farm has a negative influence on the same (Deininger 2011; Rabirou *et al.,* 2012).

It was therefore, imperative to examine how various ways of expanding farms in the study area, as reported in literature enhance or inhibit the security of their access to land. Thus, the analysis, considered right, and relational based mechanisms of access to land. The indicator for right over land, possession of a certificate of customary

right of occupancy (CCRO), was adopted from the Tanzania's Land Policy of 1997 and the Principal Land and Village Acts of 1999. Relational aspects of access which were considered to contribute on secure access to land in the analysis include methods of obtaining farms, size of farms possessed, distance from home to farms, and number of separate plots cultivated by a household. However, the analysis of structural based access was beyond the scope of this study.

1.7 Conceptual Framework

The conceptual framework for this thesis is presented in Figure 1. The framework is informed by the theoretical framework and empirical literature. It illustrates the link between land access, livelihood strategies and selected household socio-demographic characteristics (the independent variables) and the household's well-being which is the dependent variable. The study assumed that a household's secure access to land is hindered or enhanced by socio-demographic factors. For instance, female headed households were assumed to lack security of access to land due to traditional gender relations that discriminate women from ownership and control over land.

Moreover, the well educated household heads who also receive reasonable income are expected to have used their extra income to purchase fertile, reasonable sized and conveniently located land parcels consequently, have a secure access to land. Furthermore, land secured households were expected to stand a better chance in venturing in to higher paying LS hence, increasing the likelihood for attaining well-being. Lastly, the study also assumed that some selected socio-demographic

characteristics as presented in Figure 1, have a significant influence on the household's ability to pursue well paid LS and consequently attain its well-being.

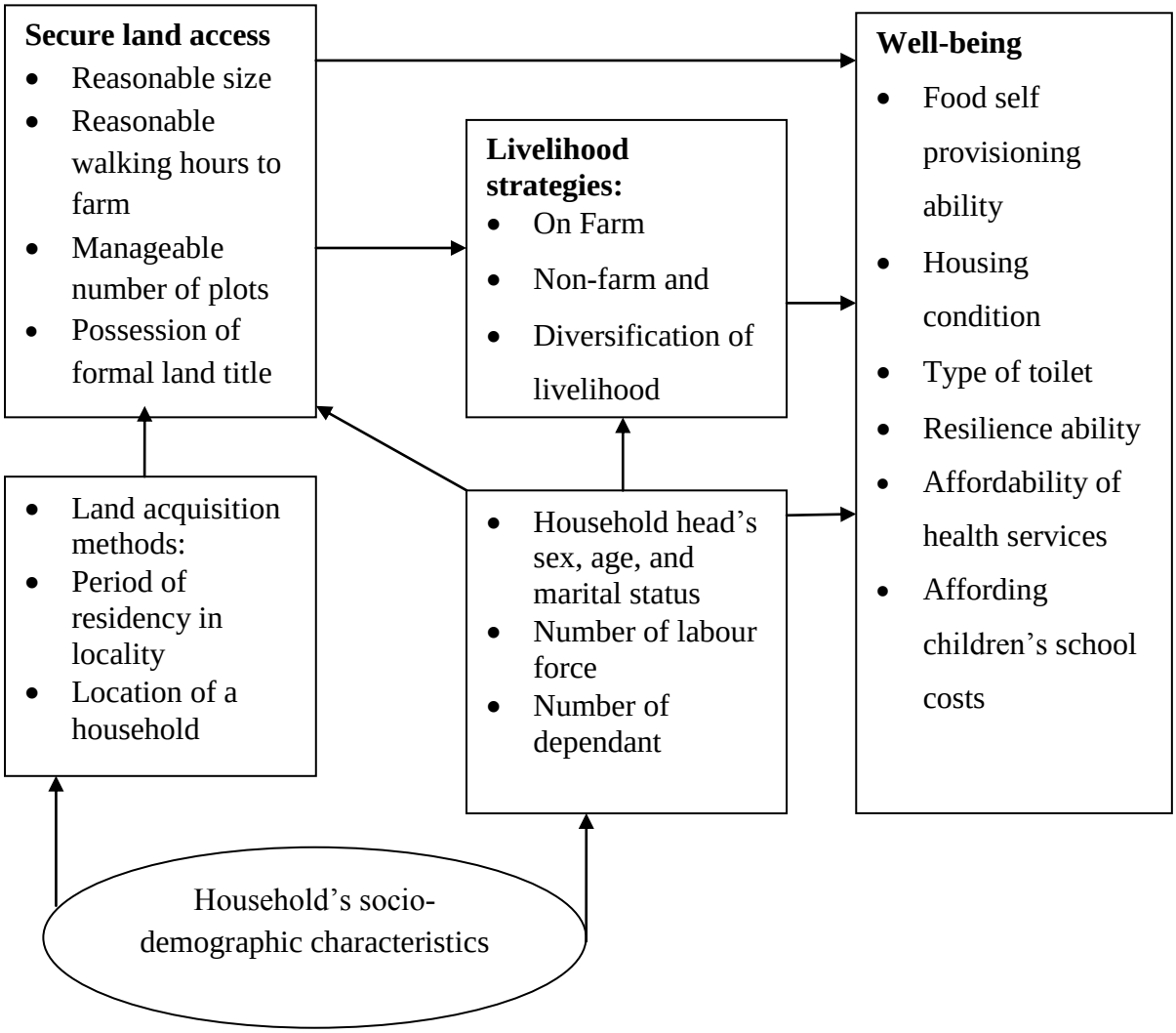

Figure: 1. Conceptual framework for analysing the link between land access, livelihood strategies and a households' well-being

The conceptual framework is summarized in multinomial logistic regression model as follows:

$$P(y) = \frac{e^{\alpha + \beta 1X1 + \ldots\ldots.... \beta 15X15}}{1 + e^{\alpha + \beta 1x1 + \ldots \beta 15X15}}$$ (Agresti and Finlay, 2009)

Where:

P (y) = the probability of a household to be well-off, e= the natural log, α= the intercept of the equation, β_1 to β_{15}= coefficients of the predictor variables and x_1 to x_{15}= predictor variables as listed below:

X_1 = per capita land size, X_2 = number of possessed plots, X_3 = distance from home to farm, X_4 = type of possessed land title, X_5 = on farm, X_6 = non-farm , X_7 = diversification, X_8 = period of residence in locality, X_9 = location (Mgeta/Mlali), X_{10} = land acquisition method, X_{11} = household head's sex, X_{12} = household head's education level, X_{13} = household head's age, X_{14} = household head's marital status and X_{15} = number of household's dependants.

1.8 General Methodology

1.8.1 Study Area

The study was conducted in, Mvomero District, Morogoro Region, specifically in Mlali and Mgeta divisions. The map of Mvomero District showing the location of the studied villages is presented in chapter three particularly in Paper 3, Figure 1 on page 6. Mgeta Division constitutes several villages bordering the Eastern Arc Mountains (the Uluguru Mountains), several forest reserves are found in the area and most of the land is steep. The climatic condition is favorable for majority of tropical crops hence, attracting many farmers, yet it is a target for conservation programmes. In year 2008 some farmers in this Division were evicted from their former farms to pave way for the development of Uluguru Nature Reserve. This increased pressure on arable land. The population density in the area was above 240 people per square

kilometer in 2007 (WWF *et al*., 2007). This is above the current national average of 51 persons per square kilometer (URT, 2013). Recently, Nyenza *et al.* (2013) reported that farmers in Mgeta expand their farms by cultivating on plain lands available in neighbourhood villages. As such Mlali being the neighbourhood division containing plain land was considered to be the destination of Mgeta migrants. Based on the above mentioned criteria, the Divisions could offer good results on land access, livelihood strategies and household well-being in rural land scarce areas. It was considered that, there is a possibility of results being applicable to other rural areas of Tanzania where households face land scarcity.

1.8.2 Study design

The study adopted a cross sectional research design whereby, qualitative and quantitative data were collected once from each village. The design was seen suitable as it allows collection of data at a single point in a time, while estimating the prevalence of outcome of interest (well-being in this case) as sample is taken from the whole population (Kothari, 2004). In addition, this design is cost effective and takes little time while assuring appropriate quality of data.

1.8.3 Sampling technique and sample size

The study adopted multistage sampling procedure. Mvomero District, Mgeta and Mlali Divisions were purposely selected based on land scarce criteria. Two Wards from each Division namely Tchenzema, Nyandila, Mlali and Mzumbe were purposely selected based on remoteness. From each ward; two villages namely Tchenzema, Kibuko, Mwarazi, Kibagala, Mlali, Manza, Changarawe and

Sangasanga and 34 households from each village were selected randomly making a total of 272 households. However, the study ended up with 267 responses because five questionnaires were not appropriately filled. The random selection of households was based on the fact that variation of variables under study within households was minimal.

1.8.4 Data collection

Both qualitative and quantitative data collection methods were used to allow them to complement each other. This is because each method has its own limitations (Tashakkori and Teddlie, 2010). Quantitative data on land size, number of plots and distance to farm were collected using structured questionnaire. The collection of qualitative information including indicators of well-being and convenience for land parcel patterns as perceived in the area employed focus group discussions (FGDs) and interviews to key informants (KIs). The FGDs and KIs were guided by a checklist of items. A total of eight FGDs composed of 8-12 participants were conducted, one in each village for clarity and good quality of data (Masadeh, 2012). The use of FGDs and KI interviews aimed at expanding insight on opportunities and constraints related to land access and associated factors as well as livelihood strategies. In forming the groups, efforts were made to ensure representation of various social groups (age and sex) to capture age and sex specific views and opinions. In addition, in-depth interviews with one representative from Village Land Councils for each of participating villages were conducted. Selection of the key informants was based on age and experience. The aim was to get the member with

long experience in respective villages that could provide realistic information on trends of land access and related livelihood issues.

1.8.5 Data analysis

The details for analysing data with respect to the specific objectives of the study and the measurement of variables are presented chronologically in Chapter 2 under respective papers. Summary of data analysis methods for each specific objective is presented in Table 1. Binary logistic regression was used to analyse the factors associated with access to land because it is the appropriate model for predicting dichotomous outcomes which was the case for land access (Pallant, 2010). Likewise, as advised by Field (2013) the appropriate model for predicting more than two categorical outcomes is multinomial logistic regression. As such it was used to assess the impact of land access on choices of livelihood strategies and the ultimate household well-being. This is because the outcome variables had three categories. Although well-being was ordered into well-off, moderately well and not well, the analysis did not intend to maintain the ordering of the values of the variable as this could distort the meaning of results. As such the variables were treated as nominal categories. In that respect multinomial logistic regression was the most appropriate model relative to ordinal logistic regression which considers the order of values of outcome variables (Field, 2013).

Reliability of data was assured by testing for violation of assumptions such as outliers, sample size and multicollinearity as advised by Pallant (2010). Cases that were not well explained by the model such as a case which exhibited to possess a

very large size of land was identified by inspecting the residual and considered to be outliers. Such cases were omitted in the final analysis. Likewise, a predictor which had limited number of cases in each category was identified through descriptive statistics and was collapsed. This was done on the case of types of land titles whereby, majority did not have formal land titles. In addition, high inter-correlation among predictors was checked using collinearity diagnostics. Variables that illustrated tolerance values less than 0.1 where considered to have high correlation with other variables in the model as such they were omitted (Pallant, 2010). This occurred within the variables of size of land and that of number of plots located in different locations. As such only the variable of size of land was allowed in the model.

Table 1: Data Analysis Methods for Each Specific Objective of the Study

S/N	Objective	Data analysis method
1.	Determine land access and associated factors	Content and descriptive analyses; binary logistic regression
2.	Analyse the effect of land access on the choices of livelihood strategies	Content and descriptive analyses; multinomial logistic regression
3.	Assess the impact of pursued livelihood strategies on household well-being	Content, descriptive and principle component analyses; multinomial logistic regression
4.	Isolate the impacts of land access variables and that of pursued livelihood strategies on household well-being	Multinomial logistic regression

Interpretation of the output from the model focused on β-coefficients for determining whether the direction of the predictor variable was positive or negative (positive values connoted a positive direction meaning that the variable increase the

probability for the outcome variable to occur; wald statistics for measuring the contribution or importance of each of the predicator variables on the predictive ability of the model (the bigger the value the greater the contribution of the respective variable); sig. (p-values < 0.05) for measuring the significance of the contribution of each of the predictor variables on the predictive ability of the model and the odds ratio (Exp(B) values) for explaining the chances for the outcome variable to occur subject to a predictor variable or when a predictor variable is increased by one.

1.9 Organization of the Thesis

The thesis has been developed in published papers format comprising three chapters. The first chapter presents the introduction chapter offering background information of the thesis, the statement of the research problem, justification for the study, and study objectives. The chapter also presents the study's research questions, and the hypotheses which the study aimed to answer or test respectively. Chapter two presents 2 published papers and two accepted papers, one accepted by Ufahamu: A Journal of African Studies and the second one accepted by the Journal of Natural Resource and Development. The arrangement of the papers follows the arrangement of the objectives. Chapter three offers a summary of the study results, conclusions and recommendation. Finally the thesis ends by presenting the tools that were used to collected data in Appendices 1, 2 and 3 as well as the copies of emails from the chief editors of respective Journals notifying acceptance of papers 3 and 4 in Appendices 4 and 5 respectively.

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CHAPTER TWO

Paper I: Land Access and Associated Factors in Densely and Sparsely Populated Areas: Mvomero District Tanzania

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Paper ii: Land Access and Livelihood Strategies in Mvomero District Tanzania

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Paper iii: Impact of Livelihood Strategies on Household Well-Being in Land Scarce Areas: Evidence from Mvomero District, Tanzania

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A copy of an email from the Journal's chief editor acknowledging to have accepted the manuscript is attached (Appendix 4)

Paper iv: Land Access, livelihood Strategies and Rural Household Well-being in Mvomero District, Tanzania

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Accepted by the Journal of Natural Resources and Development [http://jnrd.info]

A copy of an email from the Journal's chief editor stating progress of the paper is attached (Appendix 5).

CHAPTER THREE

3.0 Conclusions and Recommendations

3.1 Conclusions

The main objective of this study was to examine the effects of land access on rural livelihood strategies and its implications for household well-being in land scarce villages. The specific objectives of the study were to determine land access and the associated factors, analyse the effects of land access on the choices of livelihood strategies, determine households' well-being based on the studied communities' indicators of well-being and how it is influenced by the pursued livelihood strategies and assess the impact of land access and pursued livelihood strategies on household well-being.

3.1.1 Rural households land access and the associated factors

Various ways through which rural households access arable land and the factors that influence the same are discussed in chapter two. Specifically, this is covered in paper one which addresses the first specific objective to determine land access and associated factors. Using qualitative and quantitative methods, the paper determined four aspects to attain its goals: (1) the methods through which households acquire arable land, (2) the status of tenure security based on possession of land titles and the types of possessed land titles, (3) status of households' land access (secured or insecure) based on the patterns of the possessed land parcels such as size, distance and the number of plots and (4) the factors that influence a household's secure access to land in densely populated areas (Mgeta) and sparsely populated areas (Mlali).

Content and descriptive statistical analyses results demonstrated that in both sites, inheritance and purchase were the main methods of acquiring land implying that a household's purchasing power and or its individual members' rights to inheritance contribute to its access to land. In addition, in both sites the majority of households possessed informal land titles meaning that they did not have security of land tenure. The existing common and customary access regimes in Mlali were unable to protect the interests of dwellers on their land. This was manifested through sell of common land to large scale investors out of the villagers' consent. In addition, the delayed settlement of associated disputes implies non-compliance to the land law. As a result, most of the village land was illegally occupied by land hoarders. In addition, monetary poverty forced farmers to sell their farms. Moreover, repeated fragmentation and frequent occurrence of soil erosion in the slopping plots of Mgeta were reported to have caused land scarcity. Study results also verified that a significant proportion of households in both sites were either landless or nearly landless (possessing less than 0.2 ha which is the mean per capita land size in the area). The results also revealed that people were wasting up to 6 hours to trek to farms, and some households possessed their lands in more than 4 separate tiny plots which they could not manage to take care.

Based on the theory of access, the above mentioned features together contributed to defining secure access to land in terms of right and relational based mechanisms of access. In that regard, the fact that more than two-thirds of the studied households did not have registered land titles to guarantee their rights to use and own the possessed land and that the patterns of the possessed land parcels led them to waste

much of their productive time and cost, demonstrated insecure access to land. However, binary logistic regression results confirmed that a household's income, value of assets and location have a significant influence ($p < 0.05$) on the likelihood for a household to gain secure access to land.

The study concludes that, generally, the studied communities do not have secure access to land due to context specific factors. While the access to land in Mgeta is restricted by repeated fragmentation and soil erosion, it is limited by monetary poverty, land grabbing and hoarding in Mlali. Based on the two mechanisms of resource access adopted from the access theory, it is also concluded that right based access especially possession of land titles and relational based access particularly the patterns of the possessed land (size and distance to farm) together contribute to reduce security of access to land among the studied households. This was manifested through lack of registered titles and wastage of production time through travelling to farm. However, the hardships are minimum among those households earning high income, or having productive assets and those located far away from the Uluguru Nature Reserve.

3.1.2 The effect of land access on choices of livelihood strategies

The influence of land access on the type of livelihood strategies (LS) pursued by a household is discussed in Chapter two. This is particularly covered in paper two, which addresses the second specific objective which was to analyse the effect of land access on livelihood strategies. Through qualitative and quantitative methods, the paper identified the types of LS pursued by the studied households. It also analysed

the household's capacity (in terms of knowledge, skills and assets ownership) to diversify from farming to higher paying LS. Finally, the paper tested the hypothesis that the adopted livelihood strategies did not vary with the variation of access to land among the households. The results from content and descriptive statistical analyses show that in both sites there was a high interdependency between farming and non-farming activities whereby, income from non-farm activities was reinvested in farm inputs and implements to sustain a living.

It was further revealed that all the non-farming activities undertaken in both sites derived resources from land, emphasizing high dependency on land as a key resource in the area. Moreover, the results demonstrated that seasonal migration, distant farming and farming on scattered plots were the main ways through which dwellers cope with arable land to cope with land scarcity. In addition, the use of industrial fertilizers was portrayed by the findings to be an additional coping strategy undertaken by Mgeta households to cope with loss of soil erosion resulting from frequent soil erosion. However, the results illustrated that seasonal migrants could settle in their destinations, given the guaranteed availability of irrigation water for their cash crops (vegetables) which they got from nearby catchments in home villages.

Lack of secondary education, labour skills, savings and credit necessary for undertaking high paying LS was verified to have limited the capacity of a household to endeavour in higher paying LS. Consequently, a significant proportion of households were found engaging in exclusive survival non-farm LS. Unlike the

hypothesis, the results of multinomial logistic regression showed that location and distance to farm had a significant influence ($p < 0.05$) on the likelihood for a household to engage in non-farm LS. Likewise, unlike the hypothesis, land ownership confirmed to have a significant influence ($p < 0.05$) on the likelihood for a household to undertake sole farming. Based on the above results it is concluded that regardless of land scarcity in the study area, majority of households are still confined in farming. However, insecure access to land coupled with lack of capital for engaging in high paying LS compelled a significant proportion of households to venture in survival LS.

3.1.3 The influence of livelihood strategies on household well-being

The influence of livelihood strategies on well-being is discussed in chapter two. Specifically, it is covered in paper three which addresses the third specific objective; to analyse the influence of livelihood strategies on well-being. Using quantitative and qualitative methods, paper three explored the way well-being is conseptualised in the area, and determined the general status of households' well-being based on their own indicators of well-being. Finally, the paper tested the hypothesis that the odds of attaining well-being were the same among households undertaking different livelihood strategies.

The study's results illustrated that household socio-economic characteristics such as self food provisioning ability, resilience ability, possession of productive assets, ability to educate children above standard seven and housing conditions including, iron sheet roofing, concrete brick walls and cement floor materials are considered to

be major indicators of the majority of households' well-being in the study area. The findings also demonstrated that the general household well-being (HWBS) was low as manifested through high inequality in possession of durable assets, disposing of assets, especially land to cope with risks and shocks. In addition only about 7% of households crossed the set ailing line. Unlike the hypothesis, the study results verified that sole farming and female heads had a negative significant ($p < 0.05$) influence on the likelihood for a household to be well-off, holding the factor of access to land constant. Similarly, unlike the hypothesis, diversity of LS demonstrated to have a positive significant ($p < 0.05$) influence on the likelihood for a household to attain well-being, also holding the factor of land access constant. The study concludes, based on the results, that majority of studied households were not well off. However, as proposed by the DFID's sustainable livelihood framework that the different livelihood strategies and capabilities have different influences on a household's likelihood to attain its priorities, those households diversifying LS stood a better chance to attain well-being, especially the ones headed by males.

3.1.4 The Impact of land access and livelihood strategies on household well-being

The impact of land access and livelihood strategies (LS) on household well-being (HWBS) is discussed in chapter two. This is covered in paper four, which addresses the fourth specific objective of the study: determining the factors that mostly influence household's well-being. Paper four used quantitative methods to isolate the predictive ability of the variables measuring land access and those measuring livelihood strategies for the likelihood that the household will attain well-being. The

paper tested the hypothesis that the odds of attaining well-being were the same among households accessing land in different ways and undertaking varied livelihood strategies.

As pointed out in the DFID's sustainable livelihood framework, there was a variation of the influences of different variables on the likelihood for a household to attain well-being. Unlike the hypothesis, the results confirmed that per capita land size possessed by a household had the highest positive significant ($p < 0.05$) impact on the likelihood for a household to be well-off. Other variables that were found to have a significant ($p < 0.05$) influence on the likelihood for a household to be well-off in order of their significance levels are location, distance to farm, sole farming, household head's sex and the number of dependants. It is concluded that generally, household's per capita land size has the highest impact on its well-being in the study area. However, the following factors limit households' well-being: wasting great time trekking to farms, venturing on sole farming, having many dependants and a household being headed by a female.

3.2 Recommendations

The study advances the following recommendations in order to enhance access to arable land by small-scale farmers and their ability to pursue reasonable livelihood strategies for attaining desired well-being in the study area and other land scarce villages of Tanzania with similar context.

3.2.1 Enhancing small scale farmers' secure access to land

Based on the conclusion that households in Mgeta migrate on seasonal basis to cope with soil erosion and shortage of arable land, and that settlement of seasonal migrants is limited by lack of irrigation water in their destination and also land grabbing and hoarding is limiting secure access to land in Mlali, The government of Tanzania, especially the implementers of the National Land Policy and the National Strategy for Growth and Reduction of Poverty, are advised to support the initiatives undertaken by dwellers of land scarce areas to enlarge farms through seasonal migration by investing in irrigation infrastructure in villages of their destination to encourage settlement. The government is also advised to curb land grabbing and hoarding in rural land abundant villages through enforcing adherence to the Land and Village Land Acts of 1999 at all land administrative levels.

Furthermore, the government, through its Ministry of Lands Housing and Human Settlements Development, is advised to strengthen security of tenure in rural areas by speeding up and blending the current land formalization programme with the creation of awareness on tenure security. To be more successful, they should encourage small scale farmers to venture in land rentals rather than selling the only possessed portions of land leading to destitution. Moreover, the National Economic Empowerment Council (NEEC) is advised to work closely with Local Government Authorities and Village Executives to address monetary poverty in Mlali and other rural areas where people sales land to meet basic needs through investing in income generating projects to discourage irrational sells of land. It is also recommended that, the Ministry of Agriculture, Food Security and Cooperatives should partner with

Sokoine University of Agriculture and farmers to manage soil erosion within the sloping farms in Mgeta and other villages with similar context.

3.2.2 Addressing irrational diversification of livelihood strategies (Survival LS)

Based on the study's observation that, insecure access to land coupled with lack of capital for engaging in high paying LS confined households to survival livelihood strategies; the government of Tanzania through its Ministry of Labour and Employment is advised to promote diversification of LS in the study area and those with similar context. Nonetheless, investment in education and labour skills trainings is crucial for a meaningful diversification of LS. In addition, households should be encouraged to save and their access to credit should be improved.

3.2.3 Enhancing progress in attainment of well-being

Generally, it was observed that while per capita land size has a positive influence on well-being, sole farming; long distance to farm; female heads and households having many dependants exert a negative influence on it: The government of Tanzania is advised to support rural farmers in land scarce areas of Mvomero District to increase the size of the land they possess and reduce the distance to farms through supporting settlements in their distant farms by investing in irrigation. This may be blended with the promotion of diversification of livelihood strategies for more effectiveness. To be inclusive the initiatives should pay special attention to female headed households and those having more than the average number of dependants.

3.3 Recommended Areas for Future Studies

The study recommends the following areas for further research;

i. This study did not focus on other factors which are depicted to have influence on livelihoods outcomes by the sustainable livelihoods. Therefore, future studies on the influence of such factors as institutions, policies, organizations external context such as technology, demography, and economy, natural and man-made shocks and seasonality is recommended to unveil the remaining part of variation in households' well-being in the area.

ii. It was established by this study that seasonal migrants fail to settle in land abundant areas because the areas lack irrigation water. In that view, a feasibility study on rain water harvesting and use of underground water for irrigation to better inform the intervention is recommended.

iii. Based on the findings that land grabbing and hoarding limit land access in Mlali the study proposes a further analysis on the factors associated with land grabbing and hoarding in land abundant villages to inform policy makers and implementers.

iv. The study findings pointed on the existence of great number of female headed households resulting from male migration to gain larger and prime lands. The analysis of the impact of land access and consequent livelihood strategies on gender relations in land scarce areas is therefore advised to inform gender specific interventions.

3.4 Contribution to Knowledge

3.4.1 Policy implications

The study found that seasonal migrants fail to settle in land abundant areas because the areas lack irrigation water. This offers a base for appropriate focus of the implementation of National Land Policy (NLP) in its effort to enhance access to land among smallholder farmers by encouraging them to settle from land scarce to land abundant villages. The focus should be investments in rain water harvesting and irrigation schemes in the villages of migrants' destination.

The study also found that majority of studied households lacked post standard seven education and labour skills trainings as well as financial capital necessary for engaging in higher paying non-farm activities. To achieve the mission of cubing rural income poverty through promotion of non-farm activities, the implementers of the National Strategy for Growth and Reduction of Poverty may use the results of this study to focus on supporting access to credit, post standard seven educations and labour skills trainings.

The results on secure land access and chosen livelihood strategies show that per capita land size, short distance to farm and diversification of livelihood strategies have a positive influence on household well-being. These results are useful to guide proper match of rural poverty interventions aimed at enhancing secure access to land among rural poor. The interventions as proposed by the International Fund for Development (IFAD, 2010) include; (1) Increasing the size of land accessed by the poor (2) improving the means through which the poor access land (3) enhancing tenure security (4) promotion of non-farm activities to complement farm income.

3.4.2 Theoretical implications

Based on mechanisms of resource access depicted by the access theory, the study determined indicators of access to land among studied households. The indicators were then used to develop a localized land access index scores for each household. The use of the access theory to compliment sustainable livelihood framework (SLF) helped to understand the actual contribution of possessed land parcels pattern and that of the possessed land titles on people's security of land access, pursued livelihood strategies and the ultimate well-being. In that respect, farms which were either located far from home or exclusively rain fed, and or constituted more than two differently located plots demonstrated to impose high production costs and loss of production time. In addition, the majority of households lacked formal land titles necessary to guarantee their occupancy and ownership. These together reduced the security of people's access to land leading them to copying and survival livelihood strategies which largely stagnate or reduce their well-being status. SLF in rural land access studies should therefore be complimented with the access theory for the proper capture of land access variables.

The study used people's own indicators of well-being to develop indices of household well-being. The Principal Component Analysis (PCA) was used to organize and reduce the obtained multidimensional indicators into standard deviations, means and weighted measures of well-being. These were easily substituted to Filmer and Pritchett (2001)'s asset index formula to construct a well-being index score for each household. The indices where useful in categorizing

households based on well-being status. The method can be adopted by other pioneers of subjective well-being in assessing well-being.

APPENDICES

Appendix 1: Household Questionnaire

SOKOINE UNIVERSITY OF AGRICULTURE

Study on Land Access, Livelihood Strategies and Household Wellbeing in Densely Populated Areas of Tanzania

Introduction

This study is conducted in order to understand the livelihood strategies and well-being of people living adjacent to the Uluguru Mountains relative to their access to arable land in Tanzania. The findings will be used for academic purposes at the Sokoine University of Agriculture. Your household has been selected to represent other households in this village. Your response is very important in exploring the actual ways in which individuals in this community make their living, and how they take advantage of opportunities endowed to them and the way they overcome obstacles. The information you will provide will only be used for the above purpose, and will remain confidential. Your cooperation is highly appreciated.

1. Household identification

A. Household General Information

S/No	Item	Name/number
1.	Interview start time	
2.	Date of interview	
3.	Questionnaire no	
4.	Name of interviewer	
5.	Name of respondent	
6.	Hamlet name	
7.	Village Name	
8.	Division	
9.	Ward	
10.	District	
11	Region	
12	Date of interview	

2. Assessing the Composition Household

B. Household Composition

S/N	Member	Sex	Age	Relationship with household head	Highest level of formal education	Main economic activity	Contribution of main occupation to household income
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

b) For how long have you lived in this village……..

(Years)

c) Are you a native/were you born in this village Yes/No

If the above answer is no asked; when did you come in this village?

What prompted you to come to this place?

…….……

C. Assessing Livelihood Strategies Portfolio

1. What kind of livelihood activities is your family involved in?

Item	Types	Duration			
		Hours	Days	Weeks	Months
Agriculture intensification	Horticulture (flower)				
	Horticulture (Fruits				
	Horticulture (Vegetables)				
Agriculture extensification	More land into cultivation				
	More land in grazing				
Non agriculture low skilled jobs self employment					
Non agriculture high skilled jobs self employment					
Non agriculture low skilled jobs wage employment					
Non agriculture high skilled jobs wage employment					

2. What problems do you encounter in livelihood activities?

I……...

Ii……..

Iii……

D. Assessing Portfolio of Assets

i. Human capital in the household

S/N	Item	Quantity
1	Number of years in school of the most educated household member	
2	Whether any adult member has labor skills (1=yes,0=No)	
3	Whether any household member has disability, (1=yes, 0=No)	
4	Size of labor force (Number of working people)	

ii. Financial Assets (Assess the following

S/N	Item	Tick if yes and x if No
1	Whether household members operate a bank account	
2	Whether a household member is accessing credit/loan	
3	Have certificate of land occupancy	

Income per Month

Range	Mark	Source
<10000		
10000-20000		
20000-30000		
30000-40000		
.>40000		

iii. Land capital

1. Indicate the size of land your household own……..(acres)
2. Who owns land in this household?
    a) Father only
    b) Father and mother

c) Each adult aged above 18 years old

d) Each male adult aged 18 years old

3. Is all the land you own on one plot

a) Yes

b) No?

4. If the answer in question 3 above is no; how many plots do you own?

5. Show the sizes of your plots in the table below

Land owned	Plot 1	Plot 2	Plot 3	Plot 4
Size of plot in acres				
Time used to walk to the plot				

6. Do you rent land for farming?

a) Yes

b) No

7. If the answer above is yes; how many acres?

8. Who do not own land in this household?

a) Children below 18 years of age

b) Disabled

c) Women

d) Girls

e) Men

f) Boys

9. How did you get the land you are cultivating?

    a) Inherited
    b) Purchase
    c) Rented
    d) Others,

    specify……..……

10. What type of land right do you have?

    a) Customary certificate of occupancy
    b) Legislative certificate of occupancy
    c) none
    d) Others,

    specify……..

11. If the answer in number 10 is c, why?

    a) I don't need
    b) Long and expensive procedures
    c) Others,

    specify……...……

12. Apart from farming what other use do you put on your land?

    a) Use as a collateral to get credit/ loans
    b) Receive lease rent
    c) Leave it to rest

d) Other,

specify……

13. Is the arable land you own sufficient to meet all the family food and other needs?

a) Yes

b) No

14. If the answer in number 11 above is no, how do you manage to meet other needs?

a) Sale of labour

b) Receive remittances

c) Pert business

d) Reduce consumption and expenditure

e) Others,

specify……

15. What limitations do you face resulting from insufficient arable land supply?

a) Cultivating for self and landlords

b) Failure to access credit

c) Cannot cultivate perennial crops

16. Others,

specify……

17. What is your general view concerning land access in your area?

iv. Physical Assets

Assets	Total Number	Value per Unit (Tshs) by June 2011
Car/Motorcycle		
Generator		
Bicycle		
Carts		
Radio		
TV		
Lamps		
Working tools		
Mobile phone		
Solar Units		
Others (Specify)		

Animals

	Cattle	Goats / Sheep	Pigs	Chickens	Donkeys	Others specify
Total Number						
Value in Tshs. by June 2011						

v. Social Capital (Type of social net work a household member in involved in)

	Type	Formal	Informal
Involved	Credit groups Welfare group School committees Religious association Others, specify	Yes No	Yes No
Not involved		Lack of time Lack of contributions Not interested Others, specify	Lack of time Lack of contributions Not interested Others, specify
Do they/does It strengthens your LS		Yes No	Yes No
Are you satisfied with its/their services?		Yes No	Yes No
What social networks are lacking?	Business Agricultural expertise Others, specify		

i. Where do you get treatment in the time of sickness?

   a) Health centers

   b) Herbalists

   c) Buy medicine from shop

   d) Just stay home

ii. If the answer in question 21 is not (a), what is the reason behind your option?

   a) Lack of enough money

   b) Herbalists offer better service/ credit

   c) Others, specify……

iii. If the answer in question number 21 is (a), what is the main source of funds for that service?

a) Crop sales

b) Other income sources;

specify……

E. ASSESSING HOUSEHOLD WELLBEING

1. Housing Condition

Observe and record the number of buildings present in compound _____

For each building assess the following;

	Roof Material				Wall material					Floor material			Number of
	Thatch	Iron Sheet	Concrete	Earth	Wooden Poles	Wood and Mud	Bunt bricks	or concrete	Plant Residues	Earth	Wooden	Concrete	
1													
2													
3													
4													
5													

2. Access to Education

Item	Indicate
Number of school aged children	
Number of children who are not in school	
Reasons for being out of school (tick the answer in the next column)	Cost implication ☐ Not interested ☐ Others, specify ☐

3. Access to Water and Sanitation?

S/N	Item	Indicate
1	Do you access clean water? 1=Yes, 0=No	
2	Distance from the source of clean water (meters)	
3	Season when you lack clean water(Months)	
4	Possess and use modern latrine 1=Yes,0 =No	

4. Assessing The Access To Health Services

i. How much did you spend on health costs in the year 2010/2011?.....

ii. What are 3 main sources of funds for health services?

S/N	Source	Amount

How often do household members fall sick and attend health centres?

	Indicate how often member(s) fall sick				Indicate how often You visit health centers				Reasons for not visiting health centers often			
	(>4 X/year)	3 -2 X/year	Once /year	Never	.4x/year	3-2 X/year	Once/year	Never	Cannot afford	Distance	Poor service	Others specify
1												
2												

5. Assessing Trends In Assets Holdings

Have you ever lost any asset since 2000?

S/N	Asset lost	Value by then	Reasons for its lose

Thank you for your participation

Appendix 2: Checklist of Items for Guiding Focus Group Discussions

A. Land Access

1. Methods through which people acquire arable land
2. Who own and control land at household level (husband, wife, sons, daughters)
3. Whether land is possessed on single plot
4. Average number of separate plots per household if any
5. Average time taken to reach the main farms by majority of households
6. Average size of household farms
7. Common opportunities associated with arable land
8. Common constraints associated with arable land
9. Reasons for farming outside the villages
10. Reasonable per capita land size
11. Reasonable number of plots per household
12. General views on arable land in the village
13. Reasonable time taken to trek to farm

B. Livelihood Strategies

1. Identification of the main economic activities
2. Other economic activities undertaken by villagers apart from the main ones
3. Main sources of income
4. Main sources of food
5. Opportunities attached on each economic activities
6. Constraints associated with each economic activities
7. Types of high paying livelihood strategies
8. Opportunities and constraints attached to engaging in high paying livelihood strategies
9. General views on the pursuit of economic activities in the village

C. Well-Being

1. Qualities of a well-off household
2. Qualities of a household considered not well
3. Whether majority of households have the mentioned qualities of well-off household

Appendix 3: Checklist of items for guiding key informant's interviews

1. Main land issues handled by a land committee within the past 5 years
2. Methods through which people acquire arable land
3. Main concerns brought to the attention of land committee by people
4. Challenges faced by the committee
5. Main challenges faced by people relative to their access to land
6. General views on peoples access to land

Appendix 4: Acceptance Notification: Ufahamu Journal Ufahamu Article Decision

Inbox x

UFAHAMU A Journal of African Studies <ufahamu@gmail.com> Aug 28

to me

Dear Patricia Mwesiga Lyatuu,

I hope all is well. I apologize about the delay yet again, but we would like to inform you that your submission, "Livelihood Strategies and Household's Well-Being in Land Scarce Areas: Evidence from Mvomero District, Tanzania" has been accepted for publication. It would be published in Vol. 40. Issue 2 (Feb/March, 2016) or perhaps earlier in Vol. 39 Issue 3 (Feb/May). You will be assigned an editor who will work with you to ensure that the essay is ready for publication at the aforementioned date. The editor will provide you with the necessary steps to get the essay for publication. Once again, congratulations and we look forward to working with you in the near future.

Best Regards,
-Nana,

Appendix 5: Paper iv's Progress Notification: Journal of Natural Resources and Development

Re: JNRD answer - article 1512

Inbox x

Francisca Solar <francisca.solar@jnrd.info> Sep 3

to me, Urassa

Dear Patricia:

Kindly receive my greetings, in attachment you will find the comments of the Reviewer 1 and Reviewer 2. Please improve the manuscript and incorporate the comments from both Reviewers. All the changes made in the manuscript must appear in the document using the M.S.-word tool "track changes". Video tutorial HERE
In attachment:

1. Comments from Reviewer 1
2. Comments from Reviewer 2
3. Manuscript, please edit in the same document

For this task we give you 2 weeks, this means please send the edited version before **September 17th**.

If you have any doubt please do not hesitate in writing me
Best regards,

Francisca Solar Araya
Agriculture Engineer

JNRD Coordinator
http://jnrd.info/

Take me to Inbox
4 of **11**