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Assessing socio-economic factors and use of forest products: profiling land tenure dynamics in the Lunga Luswishi game management area in Mushindamo district, north-western province of Zambia

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ABSTRACT

This study aimed to explore opportunities available to communities in improving their land tenure rights and expand their value from natural resources through agri-culture and forest management. Conceptually, the study framed three key factors: a) understanding the key role of traditional leadership or chiefs in the allocation of re-sources; b) understanding the socio-economic situation, traditions and customs in the face of land reforms; and, c) "immigrant" communities as new owners of land in rural areas, e.g. mine and farm owners. In many respects, this study is a conversation with Karl Marx on global capitalism, commoditization of land and labour, and the associated local struggles over the social consequences of movement from use value to exchange value. The research findings confirmed the contribution of a wider body of knowledge on the role of land tenure and the socio-economic dynamics given the importance of forests in rural household income provision from sale of products and livelihood support through subsistence use of land and forest products. The results show that the use of forest products is associated with individual household socio-economic characteristics and underscores the need to critically understand attributes for better land tenure, forest management, policy and deci-sion-making processes. The policy implication is that Game Management Area (GMA) woodland is an important resource in supporting household needs of rural communities and that practices such as bee keeping and charcoal production cannot be stopped or excluded. Land tenure and forest policies should promote the integra-tion of agricultural utilization practices in land and forest management. The study also reveal that local ecological knowledge systems (cultural and religious belief systems) can significantly contribute to ecological recovery of forest ecosystems.

Keywords: Land tenure, profiling, agriculture, forests, game management area, communities

INTRODUCTION

The aim of the study is to explore opportunities available to communities to improve their land tenure rights and expand the value from natural resources through agriculture and forest management. The objective of this study is to address the following questions: i) what type of land tenure systems are prominent in the study area? What influences does the socio-economic, traditional and cultural statuses have on resource use? What explains land use and land cover change in the study area? Therefore, building an understanding of the influence of the socio-economic, traditional and cultural dynamics on land tenure and forest resource use, this study contributes to designing well informed land reform programmes and sustainable resources man-agement policies. Conceptually, the study is framed to digest three key factors: i) understanding the key role of traditional leadership or chiefs in the allocation of resources; ii) understanding the socio-economic situa-tion, traditions and customs in the face of land reforms; and, iii) "immigrant" communities as new owners of land in rural areas, e.g. mine and farm owners. In many respects, this study is a conversation with Karl Marx on global capitalism, commoditization of land and labour, and the associated local struggles over the social consequences of movement from use value to exchange value. Karl Polanyi neatly discussed this global capi-talism and commodification of land in his well theorized discussion of the market in furthering the Marxist concepts (Polanyi, 2001). This discussion highlights the resurged recognition of Karl Polanyi's influential work concerning the period of globalization and free trade arguing that societies are completely dominated by the market principle in which land, capital and labour have been commodified. The commodification of land leads to forceful ejec-tions of local communities from their land, giving way to conversions of various forms of land rights, includ-ing the forest into private rights. Communities and household use of forest is a sustainable livelihood meas-ure. However, the commodification of labour and the suppression of forest rights lead local communities and households to engage in alternative forms of production and consumption.

This study is premised on the research problem that identified an increase in land use and land cover change in the Lunga Luswishi Game Management Area. While the changes remained minimal by 2010, the increasing human pressure in the last 15 years meant adverse changes to land, wildlife and forest management. The GMA's inability to attract investment had its General Management Plan (GMP) revised in 2018 without implementation. As such, the GMA continued to be vulnerable to encroachment resulting in wildlife habitat fragmentation, forest degradation, loss of carbon sinks and biodiversity. Communities living in and around the GMA were also not been adequately involved in the management of the GMA and in the establishment of nature-based enterprises. It was not clear that the secure tenure of the Lunga Luswishi GMA ensured a vibrant productive community in and around GMA. This paper discusses land tenure dynamics, the research design and methodology, the results, discussion, and conclusions with policy recommendations.

LAND TENURE DYNAMICS

There is a growing literature focused on land tenure in rural areas that continue to generate interest from policy makers, the development community and academics (Manda & Banda, 2023; Oladehinde & Olayiwola, 2021; Singirankabo, 2020; Higgins, 2018; USAID, 2016; IFAD, 2016; Ng'ombe & Mushinge, 2014; Negi, 2010; Chand & Yala, 2009; WorldBank, 2003; FAO, 2002). This literature has linked land tenure security to agricul-tural productivity in rural areas although the claim remains debatable (Singirankabo, 2020; Chand & Yala, 2009). Mostly, it is the theoretical literature that claims that land tenure security readily avails land as collateral thereby increasing opportunities for

investment and in turn promotes agricultural performance and better quality of forests (Schweigert, 2006; Carter, 2003; de Soto, 2000). The evidence from previous studies to support the claim that land tenure security leads to increased agricultural productivity is at best limited but often does not fit so neatly in different contexts (Chigbu, et al., 2019; Alston & Mueller, 2015; Boboya, 2015; Smith, 2004). While studies from South-east Asia and South America provide the "positive association", studies in Africa are inconclusive (Kajoba, 2002; Feder & Nisho, 1999).

However, the significance of the linkage of land tenure and its security to agricultural productivity and forest management cannot be minimized. Policy makers have placed emphasis on secure land tenure by undertaking land reform programmes across Africa to strengthen agricultural performance premised on the assump-tion that increased agricultural productivity reduces rural poverty (Ali, et al., 2019; Bambio & Agha, 2018; Baltissen & Betsema, 2016; Deininger, et al., 2011). This assumption is located within the broader institutional literature and their role in development (Singirankabo, 2020; Higgins, et al., 2018; Chand & Yala, 2009; de Soto, 2005; WorldBank, 2003). The World Bank augmented this assumption when they undertook an extensive survey of literature in 2003, which prompted a number of governments from Developing Countries to pursue land reforms as part of the poverty reduction strategy measures. Framing land reforms with poverty reduction measures as discussed above appear to be a linear approach (Schweigert, 2006) that highlight limited understanding as suggested by Smith (2004) in his study of farming under customary land in Southern Zambia. There appear to be limited understanding of land reforms within a traditional customary land perspective (Manda & Banda, 2023; Ng'ombe & Mushinge, 2014) to explain the linear approach which only invite questions: are there factors explaining the lack of such a link? (Chigbu, et al., 2019; Feder & Nisho, 1999; Atwood, 1990), is it incorrect measurements for inputs and outputs? (Myyra, et al., 2007), or are there difficulties in explaining the social, cultural and ecological factors of a context specific nature that impinge on customary land reforms? (Li & Zhang, 2017; Lund & Rachman, 2016; Lund, 2000).

Lessons from Uganda indicate that a claim expected to transform customary tenure into an embodiment of a systematic demarcation to uplift rural households from poverty in fact created more land tenure insecurity (Lund & Rachman, 2016). It should be noted that neo-liberal policies have placed much emphasis on market-based land reforms and policies that ensured intensified demand on customary tenure (Lund & Rachman, 2016). Anecdotal data in Zambia show distinct dynamics that have occurred in the last 20 years after the enactment of the neo-liberal Land Act of 1995 and the publication of a Draft Land Policy of November 2002 and the Final Land Policy of April 2021 (Chisonga, 2021). These distinct dynamics as highlighted by Chisonga (2021) include, i) the commercialisation of customary land for game reserves, agricultural and other indus-trial purposes; and, ii) the emergency of an active land market in rural areas to cover both state and customary lands. Many huge titled farmlands that were highly productive over time have mostly become idle and often demarcated into small portions for regular sale transactions. Customary portions of land are also transacted in a legal laid out procedure as dictated by the government policy, but this has often promoted illegalities in the process. It is these dynamics that are reflected in what Lund & Rachman (2016) term as "land tenure insecurity" and "put presure on customary tenure".

The distinct dynamics discussed above may variously be constructed to fall under socio-economic and bio-physical factors in customary land tenure (see Handavu, et al., 2019). Socio-economic factors have been re-ported to influence the type of land tenure and the quality of forest (Mitinje E, et al., 2007). However, very few studies have looked at the link between socio-economic factors and forest or biophysical base (Handavu, et al., 2019; Ashraf, et al., 2017). Socio-economic

dynamics such as agricultural expansion (Kamwi, et al., 2015; Umar, 2014), demographic patterns that include population growth and immigration (Yohannes, et al., 2018), daily survival and livelihood needs (Giliba et al 2011), educational status, size of households, and length of stay in an area, distance to forest reserves and farm size (Giliba, et al., 2011; Mitinje E, et al., 2007) have an influence on the biophysical base. It is to be noted that the reliance of the households on the forest or biophysical base for various forest and non-forest resources cannot be over emphasized (Babulo, et al., 2008), but it also depends on the household economic status (Handavu, et al., 2019).

While some studies have investigated the socio-economic dynamics of land tenure (Oladehinde & Olayiwola, 2021) and forestry resource use in Africa (Handavu, et al., 2019; Giliba, et al., 2011), the traditional and cultural practices and ethnicity differ and are not adequately documented (Ng'ombe & Mushinge, 2014). In any case studies have already reported differences in demand and resource use (Ashraf, et al., 2017). In Zambia very little is known on how socio-economic, traditional and cultural dynamics influence land tenure and the biophysical base. A limited number of studies (see e.g. Handavu, et al., 2019; Ng'ombe & Mushinge, 2014; Umar, 2014; Chileshe, 2005) have been undertaken in Zambia to examine land tenure systems and rural livelihoods, but these studies do not interrogate the socio-economic, traditional and cultural dynamics with regards to land tenure and the biophysical base. They are one sided dimensational analysis type focusing only on land tenure (Chileshe, 2005), socio-economic and forest resources (Handavu, et al., 2019) and traditional aspects of land tenure (Ng'ombe & Mushinge, 2014).

RESEARCH DESIGN AND METHODOLOGY

This section discusses the research methodology. The study was undertaken in 2020 in Mushindamo district, North-western Province, Zambia, using both quantitative and qualitative data collection methods and analysis. The section provides a description of the study site and its traditional and socio-economic profile, the data collection processes and how data was analysed. Overall, the section is a detailed discussion of the research methodology used in this study.

Description of the Study Site

The Lunga Luswishi Game Management Area (GMA) is approximately 13,340 square kilometres in size. The GMA extends across three provinces: namely, North Western Province (NWP) on the north-west, Copperbelt province in the north east and Central Province on the south east. At the southern end it shares its boundary with Kafue National Park. The GMA cuts across Mushindamo, Kasempa, Lufwanyama, Mumbwa and Ngabwe districts. The communities of interest are those located north-west of Lunga Luswishi Game Management Area and confined to Senior Chief Mujimanzovu's chiefdom. The GMA falls in Mushindamo District of North Western Province of Zambia. It has huge ecological and economic potential as it contains some of Zambia's most pristine wildlife and forests. Though resource rich, Lunga Luswishi GMA rural communities are among 77% that live in poverty and contribute to changes use of land and forest quality. Although such changes remained minimal by 2010, the increasing human pressure in the last 15 years could mean adverse changes to land, wildlife and forest management.

Socio-economic Profile

The area is a traditionally settled by Kaonde speaking people, but it has in the recent past welcomed an influx of Bemba speaking people mainly from the Copperbelt province and Tonga people from Central and South-ern provinces. The Bemba speaking communities are concentrated within the urban milieu of the chiefdom where mining and trading activities are common place. The Tonga speaking communities locate themselves within farm blocks. Overall, subsistence rain-fed agriculture is the main economic activity of the communi-ties followed by honey production. The local communities also engage in harvesting forest trees for charcoal

production which is sold in the nearby growing urban centres of Solwezi and the Copperbelt towns. Other commercial investment activities are also found in the area. For example, Pro Hunt, a Zambian company, had exclusive hunting rights in the GMA. The area hosts some mining companies like Pride Gem, located near Musakashi River in close proximity to the Kalengwa-Kalulushi Road. This is an emeralds mining company. Several timber harvesting licences have been allocated within the GMA although this tended to alienate wild-life away from areas where timber is harvested due to the noise produced when the trees are cut.

Sampling Design and Data Collection

Site Selection

The four study sites that included Lusemeka, Maimba, Kimpembele and Kanyamba were purposefully se-lected in this study. The study sites were selected because they are within 5 to 20 kilomentres of the GMA which allowed us to relate human activities to the GMA. The area had also experienced changes in the use of land and forest quality. The selection of the sites also provided an opportunity to compare between local communities dominated landscapes and the GMA. The selection criteria covered the major components that bring out interaction between forests and human activities.

Sampling

The sampling followed a numbers of steps. Firstly, communities were identified as clusters and each was falling within 5 to 20 km distance of the GMA. The 5 to 20 km zone ensured the collection of information from households who really depend on the forests and assessing the connectivity of communities to the GMA and concomitant patterns of resource use. This approach is consistent with Obua, et al (1998) when they noted local communities within a radius of 20Km of the forest reserve were intimately connected with the forest. The traditional leaders from the four communities helped in identification of different sections within each community from which individual households were sampled using a systematically randomly selected for the study. A total of 808 households (145 in Kanyamba, 264 in Lusemeka, 239 in Kimpembele, and 160 in Maimba, respectively) were documented in village registers from all the identified communities. Thereafter, the study employed a systematic random sampling as guided by Singh & Masuku (2014) in each of the community lists at 25% sampling intensity, which is higher than the 20% recommended by other studies (see Adhikari, et al., 2004) as the minimum size considered to be a representative sample for the population. The household survey questionnaire was semi-structured for the 202 selected households.

Secondly, all farm owners/households resident in the area for at least 3 years were selected for the survey. The household heads in each household were the respondents. Where the respondents were not available or had rejected the offer to participate, no replacement household could be selected to avoid sampling bias.

Thirdly, the household is a sampling unit while the household head was a unit of observation. This study used the FAO (2010) definition of a household conceived to be a group of people living together, making common arrangements for food and other essentials for survival.

Fourthly, a pre-test of the household questionnaire undertaken in the Mushindamo district prior to the actual data collection checked for inconsistencies, errors and lack of clarity in the data collection instrument, made corrections and improved the validity of the household questionnaire (see, Babbie & Mouton, 2014; Barribeau, et al., 2015).

Fifthly, some focus group discussions to assess a number of issues related to community resource use, land tenure, the socio-economic situation of household such as income generating activities, the changing quality of the forest and its attendant factors, including the development of community-based wealth ranking. Morgan (1996) has highlighted that focus group discussions are the intentional use of interaction meant to

generate qualitative data. The major objectives focus group discussions were (i) to collect data, (ii) collecting data through interaction, and (iii) the researcher drives the data collection in the group discussion. This study intentionally identified local traditional and other com-munity leaders, whose knowledge of resource use and changes over time could be relied upon. They volun-teered information on land tenure rights within the area, forest resource use, local members' socio-economic status, the traditional and cultural practices and the everyday social struggles.

Sixth and finally, ten (10) in-depth interviews (IDIs) were conducted with the Senior Chief Mujimanzovu, senior government officials from lands, forestry, wildlife and chiefs affairs, including non-governmental or-ganization activists on land and forest resource management. The IDIs solicited for information that shared an overall picture on the question of land tenure, socio-economic, traditional and cultural dynamics in Mushindamo district.

Data Collection

The three data collection tools used included a household questionnaire, focus group discussion guides and in-depth interview guides. In addition, the use of land and quality of forest information was collected through the global information satellite (GIS). The household semi-structured questionnaire was prepared in English and indi-vidual questions were orally translated into the local languages (Kaonde, Bemba and Tonga) while adminis-tering to respondents. Four trained research assistants collected the data using household questionnaires and some focus group discussion guides. The sampled households were stratified by wealth classes generated during focus group discussions. The wealth variable was divided and ranked into four categories, namely: Very poor (n=76), Poor (n=51), Rich (n=24) and Very rich (n=16). The respondents followed this variable categorization and ranked their household wealth based on household economic activities like total land cultivated by the family, total land size the family has control and access, and type of houses the household owned, types of household assets owned, types and quantity of livestock owned, total income from non-farm activities.

Furthermore, four (4) focus group discussion meetings were conducted one in each community. These meetings consisted of 6-9 discussants per group. The information gathered from focus group discussions was used through a triangulation technique to validate data obtained from questionnaires and IDIs and to provide in-depth understanding of community activities. Various issues like wealth ranking and, migration habits of households, including community resources use were triangulated in the various data collection instruments. The FGD meetings were lasting an average of 90 minutes and were all moderated by the researcher and one assistant.

Data Analysis

The data analysis was done for both quantitative and qualitative data. The main statistical analysis methods used to analyse the quantitative information were both descriptive and inferential statistical methods. The research study used simple descriptive statistics like mean, mode, median and standard deviation, their frequency distributions and percentages to record responses and perform some analysis with the help of a computer analysis software the Statistical Package for Social Sciences (IBM SPSS) version 23. These descriptive statistics were used to explain demographic and socio-economic characteristics of com-munities. The study examined respondents' perceived roles of household members in influencing the forest use. The Pearson's Chi-square test of fitness presented the degrees of association in the variables as well as responses on the quality of forest quality and its resources. Further, the socio-economic variables were assed based on determinants showing community use of land as well as its forest products in understanding the level of forest quality. A binary logistic regression model helped in the assessments. The logistic regression model is a suitable statistical tool when determining the influence of

explanatory variables on the dichoto-mous dependent variables (i.e. with only two categories or value) when the former are continuous, categor-ical or dummy variables (Peng, et al., 2002). The model contained various independent variables like gender, age, education level, wealth, household size, and residence status. These variables were brought into the model at the same time to assess factors that explained the use of land, its tenure dynamics and forest products.

The response variables for the logistic regression model applied in this study were various forest products that communities collect. The binary variable (1 = yes and 0 = otherwise) was forest products meant to assess households harvesting forest products. Furthermore, the response variables for the logistic regression model on causes of land-cover change were charcoal production, agriculture expansion, honey harvesting, population growth, and settlements, which were also defined as bi-nary variables. Other variables like conservation knowledge and harvesting of firewood did not get to part of the logistic regression model because of low response rates to be included in the model.

Qualitative data from focus group discussions (FGDs) and IDIs were analysed through thematic and content analysis (Hsieh & Shannon, 2005). The data from qualitative analysis needed to meet the measures of trust-worthiness which include (1) dependability (2) credibility and (3) transferability. For this reason, the study had to transcribe the FGDs and IDIs discussions and provide codes followed by themes and finally an inter-pretation or description of the codes and themes based on the transcribed data.

RESULTS

Household Demographic Characteristics

Table 1 indicates the results of household demographic characteristics of the study areas. The results show a response rate of 193 respondents with 60% (n = 116) were females and 40.7% (n =76) were males. Among the respondents, 45% (n=87) attended primary and 44% (n=83) attained secondary education, while only 4% (n=7) reached tertiary education. Those that never went to school accounted for 6% (n=12). With re-spect to their wealth status, the sampled households consisted of 76% poor and very poor families while only 24% of the households belonged to the rich and very rich categories.

Results on ethnicity of participating household heads revealed a total number of 6 ethnic categories. Of these, the 3 most dominant tribes included the following; Kaonde (68.4%), Bemba (12.4%), and Tonga (9.6%). The minority tribes were among others the Lunda, Namwanga, Chewa, Ngo-ni, Swaka, Ushi, Tumbuka, Lozi, and Luvale.

Table 1: Demographic Characteristics of Households

Demographic Characteristics		
Gender of household respondents	Male headed	35.4%
	Female headed	64.6%
Average household size	8.2	
Average land holding size	4 ha	
Average cultivated land use	2.9 ha	
Household status	Indigenous	68.4%
	Migrant	31.6%
Wealth categories	Very rich	9.5%
	Rich	14.4%
	Poor	30.5%
	Very poor	45.5%

Source: Study field data, 2020

The study examined farm sizes owned by household land owners. The average farm size

was 4 hectares, with about 40% households owning between 0 to 2 hectares category. The average cultivated land size for the study areas was 1.66 hectares per household. The migrants cultivated way above 20 hectares per household and were predominantly outliers in this equation.

Factors Affecting Land Use

Population Distribution

The population distribution in the study area is heavily influenced by several factors such as good agricultur-al land, rainfall pattern, culture and traditions. The study findings indicate that the local inhabitants who are mostly Kaonde speaking were in majority (68.4%) while migrants (this study uses the word migrant loosely to imply any household outside the Kaonde speaking and had moved into the area from another district) ac-counted for 31.6% of the respondents as shown in Table 1. The factors that explain migration into the area were examined through FGDs since migrants were a sizable proportion of the population. The FGDs re-vealed that interest into the study area was largely motivated by a good rainfall pattern, good fertile soils and abundant available land for agriculture, and available opportunities for work. In addition, the FGDs showed that the great number of migrants were told through a social network of kinship relations and friends. When asked why people were migrating to the area, one male discussant in Lusemeka area made a recollection of the persistent dry spells from 2001/2002 farming season;

"I was brought up in Choma and settled in Monze when I married. The major agricultural crop I have known all my life is maize. But from 2001 to 2012 I struggled to feed my family because the rains were not there in one year and there in another year. It became difficult to plan. The drought of 2011 left us with nothing, no maize and cattle died. Even in 2012. To survive we depended on food aid from govern-ment. An uncle informed me of new agricultural lands that were available once we requested from the senior chief. I have never looked back since then."

Agricultural Practices and Production

The study results show the main agricultural practices of the area. The local communities engaged in shifting cultivation (32%, n=61), crop rotation (29%, n=56) and intensive mono-cropping (26%, n=50) as indicated in Table 2. The main crops grown in the study areas are maize, cassava and soya beans. Crop production trends for local communities show most respondents have high productivity in maize (63.7%), cassava (66.1%) and soya beans (68.6%). The high productivity is attributed to good soil fertility and suffi-cient rainfall although respondents indicated long distances to points where farming inputs and extension services were accessed made production costs high.

Table 2: Common Agricultural Practices in Study Area

Type	%	F
Shifting Cultivation	32	61
Crop Rotation	29	56
Mono Cropping	26	50
Conservation	9	17
Agro-forestry	4	8

Source: Field Data, 2020

Income Sources and Forest Resource Utilization

Income at Household Level

Table 3 presents the sources of income at household level. The households indicated that agricultural pro-duce (37.4%) was the most important source of household income in the area, followed by bee keeping (30.1%). The harvest of wild food ranked third (16.5%), followed by charcoal production and sale (10.1%) in fourth and finally income from household income generating activities like small shops and piece works (5.9%).

Table 3: Major Household Income Sources

Household Activity	%	f
Agricultural Production	37.4	72
Bee Keeping	30.1	58
Wild Food Collection	16.5	32
Charcoal Production	10.1	19

Shops, Bricklaying, Transportation, Ox-ploughing	5.9	11

Source: Field Data, 2020

Further, apart from the major household income sources, other minor sources of income for the household were livestock production that involved chickens (41.3 %), a combination of chicken and goats (31.6%), and goats (25.7%) while cows (1.4%) were the least transacted (sold and bought) in the area. Further, focus group discussion results revealed that land and forests were significant to their lives as a major source of income in the area. For example, some of the discussants said:

"While farming is key but farming inputs are very expensive to afford so we treat this forest as our re-serve bank from which we draw a living through harvesting honey and other wild foods besides charcoal production".

Overall, the results indicate that respondents had a strong dependence (98.1%) on the forest for various products. The study also examined households' fuel wood dependency for energy and results showed that 94.7% of the households use firewood, while only 5.3% use charcoal as the main household energy source. In addition, majority of the firewood users rely on charcoal for household supplementary energy needs. Table 4 presents below a number of forest products frequently obtained from the study areas. The results indicate that the highest proportion of households engaged in extracting forest products are bee keeping (90.9%), mushroom (90.9%), wild fruits (88.7%), thatching grass (83.6%), construction poles (75.3%), wood fibre (74.5%), medicine (72%), charcoal (68.3%), honey (59.9%) and wild vegetables (55.4%).

Table 4: Proportions of Households Collecting Forest Products

Item	% Proportion
Timber	32.7
Charcoal	68.3
Construction Poles	75.3
Firewood	46.8
Wild Fruits	88.7
Medicine	72.3
Root Tubers	52.2
Wood fibre	74.5
Caterpillors	48.6
Honey	90.9
Wild Vegetables	55.4
Thatching Grass	83.6
Animal Fodder	42.1
Bush Meat	59.9
Mushrooms	90.9
Brooms	39.6

Source: Field Data 2020

The study examined the association between the explanatory variables (gender, age, education, wealth status, and household size) and forest products. The findings indicated significant level of association between some explanatory variables and use of some of the forest products. The study showed statistically the association among; gender, age, wealth and charcoal production ($X2= 9.155$, $p < 0.003$; $X2= 17.928$, $p < 0.005$; $X2= 8.842$, $p <0.032$), household size with use of construction poles ($X2= 22.832$, $p < 0.003$), wealth with firewood collection ($X2= 10.193$, $p < 0.018$), gender and household size with collection and use of wild fruits ($X2= 10.849$, $p < 0.002$; $X2 = 15.966$, $p < 0.005$), education with caterpillar collection and use ($X2= 7.994$, $p < 0.047$), gender & wealth with wild honey harvesting ($X2=6.345$, $p < 0.012$; $X2= 9.036$, $p < 0.029$), education with wild vegetable collection and use ($X2=10.327$, $p < 0.016$), wealth and household size with use of thatching grass ($X2= 10.167$, $p <0.017$; $X2= 16.777$, $p < 0.004$), wealth and education with livestock fodder ($X2= 54.208$, $p <0.001$; $X2= 21.273$, $p < 0.001$), age and residence status with use of bush meat ($X2= 21.581.928$, $p< 0.005$; $X2= 4.941$, $p < 0.036$); age and wealth with collection of materials for mak-ing brooms ($X2= 35.199$, $p < 0.001$; $X2= 15.970$, $p < 0.002$). See table 5 below. However, no significant associ-ation was observed between

explanatory variables and use of forest products such as medicine, roots/tubers, wood fibre and mushroom.

There could be different reasons for households with varying socio-economic and demographic characteris-tics to depend on land and forest products as discussed above. Among many other reasons are closely associ-ated to consumption motives and response to varying challenges households come across. In order to estab-lish the likelihood that socio-economic factors influence households' use of land and forest products, six in-dependent variables (gender, age, education, wealth status, household size and residence status) were en-tered in the logistic regression model. The overall assessment of the logistic regression model for the use of various forest products revealed positive results. For the Hosmer-Lemeshow Goodness of Fit Test, poor fit is designated by a significance value less than 0.05, so to support our models we require values greater than 0.05. The chi-square values reveal that p-values are larger than 0.05, meaning there is adequate fit to data to support the models.

Table 5: Explanatory Variables and Use of Forest Products

Product	Statistical Evidence of Levels of Association											
	Gender		Age		Wealth		Education		Household Size		Residence Status	
	2	p-value	2	p-value	2	p-value	2	p-value	2	p-value	2	p-value
Timber	1.505	0.220	4.670	0.587	2.968	0.397	3.862	0.277	4.790	0.442	7.398	0.007*
Charcoal	9.145	0.002*	17.928	0.008*	8.841	0.031*	2.779	0.427	3.208	0.668	0.164	0.686
Construction Poles	0.077	0.782	11.934	0.064	0.371	0.946	6.834	0.077	22.831	0.000*	0.119	0.731
Firewood	1.113	0.292	8.481	0.205	10.193	0.017*	4.051	0.256	4.585	0.469	0.002	0.969
Wild Fruits	10.839	0.001*	9.152	0.165	4.430	0.219	0.912	0.870	15.966	0.007*	0.078	0780
Medicine	1.511	0.219	6.596	0.360	6.748	0.080	2.708	0.408	8.870	0.114	2.330	0.127
Root Tubers	1.698	0.193	10.670	0.099	4.712	0.194	0.967	0.809	1.566	0.905	1.506	0.220
Wood fibre	0.971	0325	7.676	0.263	7.519	0.057	1.432	0.698	5.104	0.403	0.039	0.843
Caterpillors	1.492	0.222	6.940	0.326	4.100	0.251	7.993	0.046*	2.998	0.700	0.306	0.580
Honey	6.342	0.012*	11.218	0.082	9.036	0.029	0.631	0.889	5.326	0.377	0.001	0.980
Wild Vegetables	1.001	0.317	4.838	0.565	3.115	0.374	10.327	0.016*	6.169	0.290	0.001	0.971
Thatching Grass	0.401	0.526	11.812	0.066	10.167	0.017	0.221	0.974	16.777	0.005*	0.069	0.792
Animal Fodder	0.000	0.993	5.676	0.460	54.209	0.000*	21.272	0.000*	6.645	0.245	0.144	0.705
Bush Meat	0.036	0.850	21.581	0.001*	1.084	0.781	4.573	0.206	7.104	0.213	4.940	0.026*
Mushrooms	0.458	0.499	8.480	0.205	1.623	0.654	1.660	0.646	4.608	0.466	2.030	0.154
Brooms	2.109	0.348	35.199	0.000*	15.980	0.001*	4.548	0.603	4.010	0.947	0.703	0.704

*Significant at 0.05 level of confidence

DISCUSSION

Demographic Characteristics

The results indicate a higher average household size of 8.2 (Table 1 above) than most studies in Africa (Giliba, et al., 2011; Kalaba, et al., 2013; Kamwi, et al., 2015). Higher average household size greatly increases the growth of population in an area, leading to increased population density. Several factors explain higher average household size in the study areas: (a) the prevelent extended family system; (b) many households valued large family setups as a source of labour since they were mainly subsistence farmers heavily reliant on human

capital labour for agriculture purposes, and (c) immigration into Mushindamo district and its various villages. Some studies suggest an overall average household size in rural areas of sub-Saharan Africa of 5.3 persons (Bongaarts, 2001) while other studies provide an estimated 5.6 to 7 persons (Alelign, et al., 2011; Teshome, et al., 2015; Zegeye, et al., 2014). Many studies (Giliba, et al., 2011; Kalaba, et al., 2013; Kamwi, et al., 2015) observe an average family size of 5.0 and 6.0 in the Bereku Forest Area of Tanzania, some parts of Copperbelt and North-western provinces of Zambia and the Zambezi region of Namibia, respectively.

Household size is an important indicator of the population's potential to impact on land and the entire environment. This study revealed that household size had influence on land, collection and use of wild fruits and livestock fodder. Additionally, the results were highly associated with household size, land, and harvesting construction poles, wild fruits, and grass. This finding is consistent with empirical research studies in sub-Sharan Africa (Mamo, et al., 2007; Coulibaly-Lingani, et al., 2009; Tugume, et al., 2015) that found a strong relationship between reliance on land, forest products and household size. This suggests that households with large families, especially those with limited income opportunities, are more dependent on land and its forest resources to fulfil their basic needs (see Bhandani and Jianhua, 2017). A study by Ashraf et al (2017) indicated that demographic changes particularly population growth, its densi-ty and distribution greatly influence the quality of land and forests. Ashraf, et al., (2017) argues that higher rural populations which are largely poor negate significantly forest cover and forest condition. Further, large family members find it difficult to access alternative sources of subsistence and thus become inclined to use land and forest resources (Coulibaly-Lingani, et al., 2009).

While it may be argued that higher household size constitutes a household problem in delivering basic household livelihood needs. There are households with several productive age members utilizing their labour for economically beneficial farming activities and exploitation of forest products. The logistic regression model results showed that household size strongly influenced farm decisions to expand and the growth of population. The results were consistent with existing empirical findings suggesting that the increasing size of household led to the heightened need for farmland (Pan et al, 2007). This finding has implications for immigration, scarcity of land and increased deforestation rates. Furthermore, the results show that as many of the individual household members reach adulthood, more demand for resources, income, and decisions for more land for subsistence crop production arise, and in return affect the use of land through forest clearing. Similarly, Haule (2014) also noted that with more members of the household within the age group of 20-45 years, the higher the likelihood of being involved in activities that cause or accelerate the land use and in turn deforestation. In addition, other studies (Nduwamungu, 2001; Madulu, 1996) found a positive association between household size, land, and environmental degradation.

Level of Education

It is suggested that the level of education among rural communities strongly influences their dependence on natural resources like land and the use of forest products (Timko, et al., 2010; Bhandari and Jianhua, 2017). The findings on levels of education showed remarkably low proportions of households with members that attained primary and junior secondary school levels. This finding indicates widespread low levels of education in Mushindamo district. The finding also underscores high levels of dependence on the forest, for forest products and land for livelihood survival. The low level of education offers very little employment opportunities for the communities. It is argued that higher level of education is strongly related with very limited exploitation of natural resources like forests for their forest products as well as land for livelihood survival since education opens multiple opportunities for employment (Adhikari, et al., 2004; Mamo, et al., 2007;

Tugume, et al., 2017) and generally wider asset base (Timko, et al., 2010). Further, studies (Coulibaly-Lingani, et al., 2009) found that education fundamentally changed peoples' exploitation of forest and forest resources. The study results show that there was strong relationship between level of education and use of forests and forest products like land and forest products like wild fruits and vegetables, and caterpillars, and harvesting fodder for livestock. In addition, the results revealed that the level of education was a significant determinant capable of substantially explaining patterns of households' and their use of land.

Distribution of Population

The distribution of population in rural areas is influenced by the medium and long-term demographic outcomes of immigration. The findings in this study show that the Kaonde speaking people were the predominant ethnic grouping to have earlier settled in the area although there are Bemba and Tonga speaking new settlers over the years. Thus, many of the households in the study were migrants into the areas. This migration into the area had resulted in population growth leading to higher population densities and pressure on land. These findings agree with empirical research stating that changes in demographic characteristics such as population growth, density, and distribution, explain the quality of land and forests (Ashraf, et al., (2017). Further, there was a rich cultural diversity among communities with different and multiple practices that appear to influence land use and land cover changes in the GMA. The findings of this current research work agree with empirical studies that suggest increased creativity and innovation due to ethnic mixing which leads to diversity and experiences (Lacuna-Richman, 2003). These findings have far-reaching implications that offers potential to understand how migrant groups can foster population growth and influence socio-cultural characteristics on land use.

The major forms of migration found in the study areas were rural-rural and urban-rural migration. The search for new farmland motivated rural people's migration while the urban-rural migration appeared to be mainly motivated by retrenchments and shrinking employment opportunities in urban settings. Many respondents migrated from urban areas due to loss of employment due to economic hardships experienced from the time the Zambian government implemented the Structural Adjustment Programme (SAP) in the early 1990s. Studies have found that often the decision or choice to migrate is driven by push factors that situate challenges and adverse situations to force people to move out of a specific locality and pull factors attract people to move to areas of preference.

Agriculture in the Area

The main agricultural practices among communities in the area were shifting cultivation and crop rotation. However, this study found that shifting cultivation was the most practiced because of communities' cultural beliefs, customs and traditional systems. Since shifting cultivation was widely practiced and takes a short-term period before a move to clear new pieces of land, it contributed to rapid changes in the quality of land and forest ecosystems. This finding agrees with other studies that attribute deforestation to shifting cultivation (Luoga, 2000; Mwampamba, 2009). In addition, the impacts of shifting cultivation on land and forest ecosystems are exacerbated by higher population growth.

It is to be noted that agricultural outputs are heavily constrained by traditional methods of cultivation for the main crops that were mostly barely enough to meet household needs. That implies households look to non-farm activities such as harvesting forest products, performing construction jobs, establishing income generating activities like shops, charcoal and honey production, the activities that have an impact on the quality of land and forest. There is need to explore better farming methods. Notwithstanding, each cultivated household farm size for the communities appears too small to fully meet all household needs, given that the agricultural technology was highly labour based production. The small farm size under

which average households cultivated their land is due to low capital base to acquire farming equipment and agricultural inputs.

These households use highly labour-intensive agriculture with hand tools like hoes and axes to work on their land on a subsistence basis. The subsistence agriculture is characterized by the use of handy tools in rural Africa, making it difficult to achieve increased production at household level. The study findings indicate that households achieved low yields in the main crop (i.e. maize) thereby subjecting the majority of households in distress and vulnerable positions. The reasons for low yields were; lack of access to agricultural inputs; and, limited availability of technical agricultural extension services. Without access to agricultural inputs and technical support, most households confirmed their low production and low productivity as a resulting outcome. The implications are that agricultural output cannot ensure sufficient households' earnings to meet the livelihoods needs. Households turn to alternative non-farm income generating activities (Yizegaw, et al., 2015). The communities thereby develop alternative income and livelihood strategies that included bee-keeping, charcoal production, collecting wild fruits and foods for sale to support and add to shortfall agricultural outputs.

Local Traditional and Socio-Cultural Practices

The local traditional and socio-cultural practices, including religious beliefs are necessary to effective management of the environment and the forest ecosystem in sub-Saharan Africa (Lingard, et al., 2003). With environmental and forest sustainable management practices in light of climate change and other global warming challenges, reverting back to local traditional practices of knowledge related systems and cultural perspectives can contribute to environmental and ecological revitalisation. The findings in this current research show that the ecological places and voices assumed sustainable management practices as evidenced by the preservation of burial sites and places for significant traditional and cultural prayers. The finding indicate that these places assumed great respect and revered practices within communities. Further, it was clear that no farming, extractive activity, or the collection of forest products from these places could be done. Local traditional practices and knowledge systems significantly contribute sustainable management of forests not only in Zambia (Luoga, et al., 2000), but in several other African vegetation formations (Lingard, et al., 2003; WWF 2006). The traditional respect and consequent preservation of many specific species suggests that local traditional knowledge practices are good for forest conservation. The findings indicate that local traditional knowledge practices play an important part in natural resource management and therefore its needs long-term planning and inclusion in strategic plan strategies. The local traditional and indigenous knowledge systems are embedded in contexts of value systems and social-religious conventions, recognition of ethical and ethics principles, ritual rites and taboos, and customs, including cultural practices for communities, which when abrogated attract or result in bad omen (Ngara & Mangizyo, 2013). Reports of positive effects in local traditional and knowledge management practices in protecting medicinal plants and their various species in burial sites are there (Msuya & Kideghesho, 2009). These local traditions, social values, and cultural norms on sacred places command great respect in several African societies (Sai, et al., 2006) and therefore there is existing potential for significantly contributing to reduced forest degradation and mitigating effects of climate change.

CONCLUSION AND POLICY IMPLICATIONS

This research study makes contributions to the body of knowledge on land tenure dynamics and the socio-economic factors given the use of forests in rural household livelihoods. The research study concludes that land and the forest in the GMA offers support to households who are largely subsistence based through various land use and exploitation of forest products. The findings have established the importance of land and

forests in rural livelihoods. The findings revealed that the use of forest and its forest products is strongly related with individual household demographic and other characteristics. The research study examined several demographic and other variables that included gender, age, education, wealth status, household size and residence status. The logistic regression model found these variables to be significant determinants of use of land, the forest, and its various forest products. The implications of these findings are that there need to understand household socio-economic factors, land, the forest and local forest utilization attributes, and their relationships. A thorough assessment of these provides a better framework for management of land tenure, the forest management, its policy and decision-making processes and implications. Policy implications resulting from this research study findings are that GMAs are important for supporting household livelihood needs in rural areas but there is need to reassess practices like bee keeping and charcoal production because of over exploitation of specific tree species. Further, the logistic regression model revealed that the agricultural expansion as well as population explosion in the GMAs significantly explained the quality and land and forests. There is need to review and revise land and forest policies to reflect the promotion of an integrated practice of land and forest management. Broader implications on minimizing the effects of deforestation needs to reassess social and economic challenges in local communities. The research study also found that local traditional and ecological knowledge were important interventions to ensure ecological recovery and highlight sustainable environmental management practices.

Three recommendations in this study include, namely: (i) the relationships between socio-economic factors, land tenure and forest utilization should be reassessed and contextualized through a clear statistical position to ensure sustainable land tenure and forest management; (ii) the livelihood household approach should be integrated in forest policy and implemented in rural communities around GMAs to enhance environmental security; (iii) integrating local traditional knowledge management practices into strategic land tenure planning, forest management and policy formulation processes is key step going forward.

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REFERENCES

Adhikari, B., Di Falco, S. D., & Lovett, J. C. (2004). Household Characteristics and Forest Dependency: Evidence from Common Property Forest Management in Nepal. Ecological. Economics, 48(2), 245-257.

Ali, D., Deininger, K., Mahofa, G., & Nyakulama, R. (2019). Sustaining Land Registration Benefits by addressing the Challenges of Reversion to Informality in Rwanda . Land Use Policy.

Alston, L., & Mueller, B. (2015). Towards a More Evolutionary Theory of Property Rights. Iowa Law Rev.

Ashraf, J., Pandey, R., & de Jong, W. (2017). Assessment of Biophysical, Social and Economic Drivers for Forest Transition in Asia-Pacific Region. Forest Policy and Economics. 76, 35-44.

Atwood, D. (1990). Land Registration in Africa: The Impact on Agricultural Production. World Dev.

Babbie, E., & Mouton, J. (2014). The Practice of Social Research (South African ed.). Cape Town: Oxford University Press.

Babulo, B., Muys, B., Nega, F., Tollens, E., Nyssen, J., Deckers, J., & Mathijs, E. (2008). Household Livelihood Strategies and Forest Dependence in the Highlands of Tigray, Northern Ethiopia. Agr. Syst, 98(2), 147-155.

Baltissen, G., & Betsema, G. (2016). Linking Land Governance and Food Security in Africa. Outcomes from Uganda, Ghana, and Ethiopia.

Bambio, Y., & Agha, B. (2018). Land Tenure Security and Investment: Does Strength of Land Right Really Matter in Rural Burkina Faso? World Dev.

Barribeau, P., Butler, B., Corney, J., Doney, M., Gault, J., Gordon, J., . . . Palmquist, M. (2015). Survey Research. Colorado: Colorado State University, USA, https://writing.colostate.edu/guides/pdfs/guide68.pdf. Accessed 19/11/2021.

Boboya, J. (2015). A Policy Paper on How Land Tenure Systems and the Access/utilization of Land could be addressed to Facilitate Rural Development in Africa. J. Mod. Afr. Stud.

Carter, M. R., & Pedro, O. (2003). Getting Institutions 'Right' for Whom? Credit Constraints and the Impact of Property Rights on the Quality and Composition of Investment. American Journal of Agricultural Economics, 85(1), 173-186.

Chand, S., & Yala, C. (2009). Land Tenure and Productivity: Farm-level Evidence from Papua New Guinea. Land Econ. .

Chigbu, U., Ntihinyurwa, P., de Vries, W., & Ngenzi, E. (2019). Why Tenure Responsive Land-Use Planning Matters: Insights for Land Use Consolidation for Food Security in Rwanda. Int. J. Environ. Res. Public Health.

Chileshe, R. A. (2005). Land Tenure and Rural Livelihoods in Zambia: Case Studies of Kamena and St. Joseph, Ph.D Thesis. Cape Town: University of Western Cape.

Chisonga, N. (2021). Dynamics of Land Tenure System and Agricultural Productivity: Evidence from Small Scale Maize Producers in Choma District, Ph.D Research Proposal. Lusaka: University of Lusaka.

de Soto, H. (2000). The Mystery of Capital. New York: Basic Books.

de Soto, H. (2005). The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere else. New York: Basic Books.

Deininger, K., Ali, D., & Alemu, T. (2011). Impacts of Land Certification on Tenure Security, Investment, and Land Market Participation: Evidence from Ethiopia. Land Econ, 87, 312-334.

Deininger, K., Ali, D., & Alemu, T. (2011). Impacts of Land Certification on Tenure Security, Investment, and Land Market Participation: Evidence from Ethiopia. . Land Econ. (87), 312–334.

FAO. (2002). Land Tenure and Rural Development. FAO Land Tenure Studies(3).

FAO. (2010). A System of Integrated Agricultural Censuses and Surveys. Rome, Italy: World Programme for the Census of Agriculture.

Feder, G., & Nisho, A. (1999). The Benefits of Land Registration and Titling: Economic and Social Perspectives. Land Use Policy, 15(1), 13-25.

Giliba, R., Boon, E., Kayombo, C., Chirenje, L., & Musamba, E. (2011). The Influence of Socio-economic Factors on Deforestation: A Case Study of the Bereku Forest Reserve in Tanzania. J. Biodiv. , 2(1), 31-39.

Handavu, F., Chirwa, P. W., & Syampungani, S. (2019). Socio-economic Factors Influencing Land Use and Land Cover Changes in Miombo Woodlands of the Copperbelt Province in Zambia. African Forest Forum(Special Issue).

Higgins, D. B. (2018). Investigating the Impacts of Increased Rural Land Tenure Security on Agricultural Productivity in India:

A Systematic Review of the Evidence. . J. Rural Stud, 61, 34-62.

Higgins, D., Balint, T., Liversage, H., & Winters, P. (2018). Investigating the Impacts of Increased Rural Land Tenure Security: A Systematic Review of the Evidence. J. Rural Stud, 61, 34-62.

Hsieh, H., & Shannon, S. (2005). Three Approaches to Qualitative Content Analysis. Qual. Health Res. , 15(9), 1277–1288.

IFAD. (2016). Rural Development Report: Fostering Inclusive Rural Transformation. Rome: International Fund for Agricultural Development.

Kajoba, G.M. (2002). Women and Land in Zambia: A Case Study of Small-Scale Farmers in Chenena Village, Chibombo District, Central Zambia. Eastern Africa Social Science Research Review, Volume 18, Number 1, January, pp. 35-61 (Article)

Kamwi, J., Chirwa, P., Manda, S., P.F., G., & Katsch, C. (2015). Livelihoods, landuse and Land-cover Change in the Zambezi Region, Namibia. Popul. Environ.

Lambin, E., Geist, H., & Lepers, E. (2003). . Dynamics of Land-Use and Land-Cover Change in Tropical Regions. Annu. Rev. Env. Resour(28), 205-241.

Li, H., & Zhang, X. (2017). A Spatial Explicit Assessment of Food Security in Africa based on Simulated Crop Production and Distribution. J. Clean. Prod, 147, 628-636.

Lund, C. (2000). African Land Tenure: Questioning Basic Assumptions. London: International Institute for Environment and Development.

Lund, C., & Rachman, N. (2016). Occupied Property, Citizenship and Peasant Movements inRural Java: Property, Citizenship and Peasant Movements in Java. Dev. Change, 47, 1316-1337.

Mitinje E, Kessy J.F, & Mombo F. (2007). Socio-economic Factors Influencing Deforestation on the Uluguru Mountains. Discov. Innovat., 19(139).

Manda, S., & Banda, L. (2023). Seeing like the State? Customary Land Pressures and Fracturing Tenure Systems in Rural Zambia. Land Use Policy, Vol. 132, September.

Morgan, D. (1996). Focus Groups. Annu. Rev. Soc, 22, 129-152.

Myyra, S., Kyosti, P., & Y., M. (2007). Exploring Long-Term Improvements under Land Tenure Insecurity . Agricultural Systems , 92(3), 63-75.

Negi, R. (2010). The Mining Boom, Capital, and Chiefs in the "New Copperbelt". In A. Fraser, & M. Larmer (Eds.), Zambia, Mining and Neo-liberalism: Boom and Bust on the Globalised Copperbelt (pp. 110-136). New York: PALGRAVE MACMILLAN.

Ng'ombe, A., & Mushinge, A. (2014). The Role of Culture and Belief Systems in Shaping Customary Land Reform. International Journal of Social Science Studies, 2(4), 123-134.

Nurrochmat, D., Nugroho, I., Hardjanto., P. A., & Maryudi, A. E. (2017). Shifting Contestation into Cooperation: Strategy to Incorporate Different Interest of Actors in Medicinal Plants in Meru Betiri National Park, Indonesia. . For. Policy Econ(83), 162-168.

Obua, J., Banana, A., & Turyahabwe, N. (1998). Attitudes of Local Communities towards Forest Management Practices in Uganda: The Case of Budongo Forest Reserve. Common Forest Review, 77 (2), 113-118.

Oladehinde, G., & Olayiwola, L. (2021). Land Tenure Security Perceptions among Nigerian Rural Communities: A Case of Atiba Local Government Area. Economic Regional Studies, 14(2), 158-186.

Peng, C., Lee, K., & Ingersoll, G. (2002). An Introduction to Logistic Regression Analysis and Reporting. J. Educ. Res. , 96(1), 3-14.

Polanyi, K. 2001. The Great Transformation: The Political and Economical Origins of Our Time. New York: Beacon Press

Schweigert, T. E. (2006). Land Title, Tenure Security, Investment, and Farm Output: Evidence from Guatemala. Journal of Developing Areas , 40(1), 115-126.

Singh, A., & Masuku, M. (2014). Sampling Techniques and Determination of Sample Size in Applied Statistics Research: An Overview. Int. J. Econ. Comm. Manag. , 2(11).

Singirankabo, U. &. (2020). Relations between Land Tenure Security and Agricultural Productivity: Exploring the Effect of Land Registration. . Land. , 9(138).

Smith, R. E. (2004). Land Tenure, Fixed Investment, and Farm Productivity: Evidence from Zambia's Southern Province. World Development 32 (10): 1641-61, 32(10), 1641-1661.

Umar, B. (2014). A Critical Review and Re-assessment of Theories of Smallholder Decision-making: A Case of Conservation Agriculture Households, Zambia. In Renewable Agriculture and Food Systems (pp. 277-290). Cambridge University Press.

USAID. (2016). Land and Global Development Agenda. Washington DC: United States Assistance for International Development.

WorldBank. (2003). Land Policies for Growth and Poverty Reduction . Washinton DC: World Bank Policy Research Report .

Yohannes, W., Cotter., M., G., K., & W., D. (2018). Land Use and Land Cover Changes and their effects on the Landscape of Abaya-Chamo Basin, Southern Ethiopia. Land, 7(2).