GENDERED LIVELIHOOD OUTCOMES AMONG WOODLOT FARMERS IN MUFINDI DISTRICT, TANZANIA

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Abstract

Woodlot farming is an important economic activity which has potential to improve the livelihoods of men and women; however the benefit derived from woodlot farming has a gender differential. The study was conducted in Mufindi District in Tanzania to analyze the livelihood outcomes among women and men engaged in woodlot farming. The study adopted a cross sectional research design and involved 120 respondents. Asset ownership was used as proxy indicator of wealth status; the wealth index was constructed to gauge the levels of livelihood outcomes. Independent T-test and Chi- square tests were used to compare livelihood outcomes among woodlot farmers and non-farmers, men and women. It was found that woodlots owners had better livelihood outcome than their non-woodlot farmers' counterparts (P<0.05). The levels of livelihood outcomes between women and men were statistically significant (P<0.05). The differences in the levels of livelihood outcome are attributable to one's engagement in woodlot farming. However, men derived more benefit in the woodlot farming due to their dominance in decision making over the income accrued from woodlot farming at household level. The study recommend the local government authority and non-governmental organizations involved in promoting livelihood improvement through woodlot farming to address gender differences in decision making over the use of income at household level. This can be done by promoting gender dialogues in the community with a view to change gender norms that discriminate women participation in decision making as well as promoting women ownership of resources by allowing more women access and control over productive resources including land.

Keywords: *Gender, Livelihood, Livelihood outcomes, woodlot farming*

1.0 INTRODUCTION

The importance of woodlots to rural communities' livelihood cannot be overemphasized. Woodlots are important in improving livelihoods for woodlot dependent communities as it contributes to livelihood improvement as reflected in the food security, health, wellbeing and income (Paulo, 2007). However, men and women benefit differently by the opportunities for livelihood improvement in the woodlot farming. Livelihood outcomes from woodlots farming are derived from sale and exchange of gathered and processed woodlot products such as timber, firewood, timber bucks and poles through pit sawying, working for pit sawyers, vending off cuts, carpentry as well as vending food and making local brew in harvesting of woodlots (Paulo, 2007; Chhorn *et al.,* 2013). Woodlots livelihood outcomes between men and women as it is in many farming activities differ. The gendered livelihood outcome in the woodlot farming affects its

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productivity and benefits realized from woodlots farming. It also affects economic development of the community and the country at large.

In Tanzania, as it is in many developing countries woodlot farming has a potential t contributing to better livelihood outcomes for both men and women engaged in woodlot farming. Woodlot farming has become an important economic activity in the southern highlands of Tanzania. The woodlot farming is ranked second after agriculture in contributing to the livelihood of people in Mufindi District. According to Hudu (2009) livelihood outcomes are objectives or purposes which are sought for by individual or household in their effort to improve their quality of life it entails many strategies including: increase in income, increased well-being and improved food security. Livelihood strategies are ways or and means of individual or household engaging in particular economic activities, organized in a particular way to that reflect their quality of life such as their ability to meet their needs, wants and aspirations (Hudu, 2009; Majale, 2002). In the context of this paper, woodlot livelihood outcomes refers to increase in income, level of asset ownership and better housing conditions.

A number of studies have used income, asset ownership and housing conditions as the immediate outcomes sought for by individual or household when deciding to engage in particular economic or production activities (Majale, 2002; Nathan *et al.,* 2005; Paulo, 2007) similar outcomes as livelihood outcomes is anticipated to be driving individuals or households in pursuing woodlot farming in Mufindi district and Tanzania in general. Income, asset ownership and housing conditions are frequently used as a proxy indicator for socio-economic status or livelihood status (Jeckoniah*et al.,* 2013).

Despite there being many other studies on the contribution of woodlot farming in the livelihood improvement (Chikoko, 2002; Malimbwi *et al.,* 2010; Muningo, 2010; Singunda, 2010; Ndayambaje *et al.,* 2012; Richard *et al.*, 2014).There has been less focus on gendered outcome of the woodlot farming. Hence, the differences in the livelihood outcome between men and women have remain unknown at least in the context of the study area. Furthermore, the gendered outcome of many development activities and interventions are difficult to generalize as they are affected by different location specific gender norms, culture and traditions. Therefore, it is important to have empirical evidences from diverse backgrounds. Such information is useful for policy makers, researchers and development partners especially those engaged in promoting gender equality and bringing about women empowerment. Therefore, this paper provides empirical evidence on gendered livelihood outcome among woodlot farmers in Mufindi District. The study from which this paper is based is anchored in the Sustainable livelihood approach as described by DFID, CARE, Oxfam's and UNDP. DFID, CARE, Oxfam's and UNDP approaches focus on how the resources are used as an asset to improve human wellbeing and promoting development by considering livelihood asset, process and structures and livelihood strategies to achieve livelihood outcomes (Majale, 2002; Hudu, 2009).

2.0 METHODOLOGY
The study from which this paper is based on was conducted in Ihalimba and Mdabulo wards in Mufindi District in Iringa region. In each ward two villages were selected where Vikula and

Nundwe villages were from selected from Ihalimba ward while Ludilo and Ihefu villages were selected from Mdabulo ward. Mufindi District was selected purposively because it is leading in woodlot farming in Tanzania (MDC,2008 ; Singunda, 2010). The study adopted a cross-sectional research design and the unit of analysis was individual women and men with and without woodlot farms from the same villages for comparison. Structured questionnaire and checklist for key informants were the main tools for data collection. Key informants interview included agricultural extension officers, leaders of woodlots' groups and village and ward executive officers. The unit of analysis was individual men and women who were participating and those not participating in the woodlot farming. Systematic sampling technique was used to select woodlot farmers whereas simple random sampling technique was used to select non-woodlot farmers. A total of 120 respondents were involved in the study where 64 (53.3%) were woodlot farmers. Of the woodlot farmers 29 (24.0%) were women and 35 (29.3%) were men and 56 (46.7%), whereas a total of 56 non-owners/farmers did participate. Of the non-woodlot farmers 29 (24.2%) were women and 27 (22.5%) were men. Descriptive and inferential statistical analysis was conducted. Wealth index was constructed to develop the wealth status as a proxy indicator of the wellbeing levels. An interview with key informant was used to develop assets that were used in the index to generate the wealth status of the household. Such assets included: poultry, bicycle, motorbike, mobile, radio, Television set, land and solar panel. The study adopted a formula developed by (Hortland, 1993 cited by Simon, 2005) to compute the wealth status of the household.

$\text{WET}i = \Sigma(y_{ij}/Y\max)$ (i = 1, 2, ----x, j = 1, 2, --------, n)

        Where WET = wealth index

        y_{ij} = number of an individual asset (poultry, bicycle, motorbike, mobile, radio, Television set, land and solar panel)

        Y_{max} = maximum number of that asset in the sample

        X = number of items considered as indicators for wealth.

        n = sample size

The formula has been used to analyze asset ownership among woodlot owners and non-woodlot owners. Based on the score on the wealth index mean, respondents were categorized into two groups. Those scoring the index mean were categorized as having low wealth status, while those scored above the index mean were categorized in the high wealth status. Independent T-test and chi square analysis were used to compare livelihood outcomes of women and men as well as woodlot farmers and non-farmers with selected background variables.

3.0 FINDINGS AND DISCUSSION
3.1 Income accrued from woodlot farming
Woodlots farming in Mufindi District contributesubstantial amount of income to individual and household.The findings as presented in Table 1 revealed that woodlots owners (25%) receive between1 000 000 and 5 000 000 TAS per annum while few woodlots owners (2.5%) receive income of 1 000 000 TAS per annum. The income of majority of non-woodlots farmers (34.2%) had their income below 1 000 000 TAS per annum. This implies that woodlots farmers have comparatively higher chances of improving their livelihood status through improved income.

The similar trend has also reported by Mgeni (2014) who found that the income of majority of woodlot owners was between 900 000 to 5 000 000 TAS per year. As also noted by NBS (2013), Mufindi District has the worst uneven distribution of wealth in Iringa region with a Gini Coeffient rate of 43 percent.

Table 1: Income accrued from woodlot farming (Percent: n=120)

		Woodlots ownership		
Variable	**Category**	**Owners**	**Non woodlots**	**Total**
Woodlot income (Tshs)	1000000 <	2.5	34.2	36.7
	1000000-5000000	25.0	7.5	32.5
	5000001-10000000	11.7	0.8	12.5
	10000001-150000000	8.3	0.0	8.3
	15000000 >	5.8	0.0	5.8

3.1.1 Income from the woodlot farming

Men and women engaged in woodlots farming have different ways of earning their income. The findings as presented in Table 2 reveals that the majority of woodlots farmers and non-farmers earn their income from sale of different products derived from woodlot farming such as: whole tree labour whereas non woodlot farmers also earn income from woodlot products as well as other economic activities (Table 2).

Table 2: Means of earning woodlot income (Percent n=120)

Variables	Woodlot ownership		
	Owners	**Non owners**	**Total**
Sale of whole tree	100.0	0.0	100.0
Sale of timber	93.3	6.7	100.0
Sale of firewood	11.9	88.1	100.0
Pit sawyer	12.6	87.4	100.0
Food vendor	8.4	91.6	100.0
Making local brew	0.0	100.0	100.0
Laborer	9.2	90.8	100.0

3.2 Control of income accrued from woodlot farming

As it is in many farming activities in Tanzania, this study found that men are dominating in making final decision over the use of income accrued from woodlot farming whereby about 56.7% of respondents reported that men controlled the decision on woodlot farming, 37.5% of respondents reported that women and men jointly make final decision on use of woodlot income and 5.8% of respondents reported that only women were involved in making final decision on use of woodlot income. This implies that although women do participate in most of the activities of the woodlot farming, they are more likely not to benefit from woodlot farming. Similar trend of women less ownership of income in woodlot farming has also been reported by Franzel and Kiptot (2012). The authors further reported that women had less participation in woodlot farming due to the scarcity of land.

3.2.1 Housing conditions

The findings on housing condition as presented in Table 3, reveal that majority of the respondents (95%) owned the houses that they live in. The differences in quality of houses on the basis of the attributes from which the houses was built reflected relatively high differences. This suggests that woodlot farming was associated with high quality of houses. Similar trend has been reported by Simon (2005) who found that adopter of woodlot had better houses unlike non adopters. Also, during the discussion with the key informant it was revealed that people had been using woodlot income in house construction and maintenance.

Table 3: Housing conditions of woodlot owners and non-woodlot owners Percent (n=120)

Variable	Category	Woodlot ownership		Total
		Owners	Non owners	
House ownership	No	0.0	5.0	5.0
	Yes	53.3	41.7	95.0
Number of rooms	1 - 3 rooms	5.0	45.0	50.0
	4 - 7 rooms	44.2	1.6	45.8
	7 > rooms	4.2	0.0	4.2
Material in wall	Burnt bricks	48.3	10.8	59.2
	Un-burnt brick wall	5.0	35.0	40.0
	Muddy wall	0.0	0.8	0.8
Material roofing	Thatch grass / mud	0.0	12.5	12.5
	Corrugated iron sheets	53.3	34.2	87.5
Material floor	Ceramic tiles	0.8	0.0	0.8
	Cement	49.2	11.6	60.3
	Sand	3.3	35.0	38.0

3.2.2 Asset ownership

The mean of the wealth index constructed was 0.0653. Score on the mean index was used as a cutoff point whereas score above and below the mean was used to categorize the wealth status of the respondents. Findings as presented in Table 4 reveal that the majority woodlot owners (94.4%) were above 0.0653. Therefore, woodlot owners were on average wealthier than non-woodlot owners. The finding suggests that owning woodlots was associated with high wealth status.The finding is similar to what was reported by Simon (2005) on the study to compare wellbeing outcome among adopters andnon-adopters of rotation woodlot.

Table 4: Wealth Index on asset owned by woodlot owners and non-woodlot owners
**   (Percent n=120)**

Wealth groups	Category	Woodlot ownership		Total
		Non-owners	Owners	
Low wealth status	0.0653 < Mean	79.1	20.9	100.0
High wealth status	0.0653 > Mean	5.6	94.4	100.0

3.3 Income and asset value of woodlots owners and non-woodlot owners

It was hypothesized that women and men with woodlot are more likely to have better livelihood outcomes than women and men without woodlot. The Independent T-test was used to test the

hypothesis. The findings as presented in Table 5 and 6 revealed that there were significant differences in livelihood outcomes (incomes and asset values) for women and men with woodlots and without woodlot (P < 0.05). Thus, the hypothesis that women and men with woodlot are more likely to have better livelihood outcomes than women and men without woodlot was confirmed. Such finding implies that woodlot farming has a potential to improve the livelihood of involved men and women similar trend of findings have also been reported by Simon (2005).

Table 5: T-test on income and asset value between women with woodlots and women without woodlot

Variables	Woodlot ownership	n	Mean	F-Value	P-value
Income	Non owners	26	721000	35.055***	0.000
	owners	28	730000		
Poultry value	Non owners	27	46000	2.848^{ns}	0.097
	owners	27	99500		
Bicycle value	Non owners	11	107000	4.537*	0.045
	owners	12	122000		
Radio value	Non owners	26	32700	14.978***	0.000
	owners	28	106000		
Land value	Non owners	29	592000	2.702^{ns}	0.106
	owners	28	1470000		
Mobile Value	Non owners	21	30500	8.454**	0.006
	owners	28	601100		

*** means significant at the 0.1% level, highest level of significance

** means significant at the 1% level, intermediate level of significance

* means significant at the 5% level, lowest level if significance

ns means not significant

Table 6: T-test on income and asset value between men with woodlot and men without woodlot

Variable	Woodlot ownership	n	Mean	F-value	P-value
Income	Non owners	25	1060000	24.370***	0.000
	Owners	36	6240000		
Poultry value	Non owners	26	4360000	14.357***	0.000
	Owners	36	117000		
Bicycle value	Non owners	21	109000	4.990**	0.031
	Owners	24	113000		
Mobile value	Non owners	19	42100	2.463^{ns}	0.122
	Owners	36	89800		
Radio value	Non owners	24	4400	5.516**	0.022
	Owners	36	126000		
Land value	Non owners	26	761000	6.704**	0.012
	Owners	36	1240000		

*** *means significant at the 0.1% level, highest level of significance*

** *means significant at the 1% level, intermediate level of significance means not significant*

3.4 Housing conditions of woodlots owners and non-woodlot owners

Housing ownership and their condition have been reported to be associated many livelihood outcome including, health, safety, and social support which provide empirical evidence of the relationship between housing conditions and quality of life. Housing condition can serve as a proxy indicator of social economic status in both urban and rural settings (Zainal *et al.,* 2012).The findings from this study as presented in Table 7 reveal that the differences in quality of houses owned by woodlot farmers and non-farmers were statistically significant (P< 0.001). This further confirms the earlier stated hypothesis that there was a relationship between woodlot farming and the status of wellbeing. The differences are high in materials used for wall construction, floor and number of rooms all reflect the quality and value of the houses owned.

Table 7: Housing conditions of women and men with woodlots and women and men without woodlot

Variable	Categories	Women woodlot ownership			Men woodlot ownership		
		Owners	Non owners	p-value	owners	Non owners	p-value
House ownership	No	0.0	2.5		0.0	2.5	
	Yes	23.3	21.7	0.80^{ns}	30.0	20.0	0.40^{ns}
Material wall	Burnt brick	19.2	6.7		29.1	4.2	
	Un burnt bricks	4.2	17.5	0.000^{***}	0.8	17.5	0.000^{***}
	Muddy wall	0.0	0.0		0.0	0.8	
Material roofing	Mud	0.0	6.7		0.0	5.8	
	Iron sheet	23.3	17.5	0.030^{*}	30.0	16.7	0.001^{**}
Material floor	Tiles	0.0	0.0		0.8	0.0	
	Cement	21.7	7.5	0.000^{***}	27.5	4.2	0.000^{***}
	Sand	1.7	16.7		1.7	18.3	
Number of rooms	1-3 rooms	21.7	23.3		0.0	21.7	
	4-7 rooms	16.7	0.8	0.000^{***}	27.5	0.8	0.000^{***}
	7 > rooms	1.7	0.0		2.5	0.0	

*** means significant at the 0.1% level, highest level of significance

** means significant at the 1% level, intermediate level of significance

* means significant at the 5% level, lowest level if significance

ns means not significant

4.0 CONCLUSION AND RECOMMENDATIONS

Woodlot farming in Mufindi District has potential to improve the livelihood outcomes. Woodlot farming has been found to improve farmers' wellbeing through an increase in income, asset ownership and housing conditions. Furthermore, the livelihood outcome among men and women woodlot farmers revealed a gender differential whereby men derived more benefit from their engagement in livelihood outcome through controlling household decision on asset ownership and control the decision making over the expenditure of household income.

In order to bring the equitable livelihood outcome among woodlot farmers'; study recommend the local government authority and non-governmental organization espoused in promoting livelihood improvement through woodlot farming to address gender differentials in decision making over the use of income at household level and in the ownership to and control of resources at household level. This can be done by promoting gender dialogues in the community with a view to change gender norms that discriminate women participation in decision making as well as promoting women ownership of resources by allowing more women access and control productive resources including land.

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