



Global Advanced Research Journal of Management and Business Studies (ISSN: 2315-5086) Vol. 2(9) pp. 454-468, September, 2013  
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*Full Length Research Paper*

# **Effectiveness of commercial forestry policy in contributing to the promotion of sustainable household income in Northern Uganda**

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Accepted 02 September 2013

**This study aimed at examining the effectiveness of commercial forestry policy in contributing to the promotion of sustainable household income and analysing the factors that affect implementation of the current Commercial Forestry Policy in Northern Uganda. Although Commercial Forestry Policy and supportive laws exist for the development of commercial forestry, which together with other socio-economic activities, mainly agriculture, could improve socio-economic conditions of households in this area with vast arable land, the population has remained largely poor with most of the land unutilised. A cross-sectional survey design was used. Questionnaires and key informant interviews were employed to collect data from opinion leaders at the local community level, local government leaders and personnel, private tree farmers, National Forestry Authority staff, Non Governmental Organisations' staff involved in forestry activities and forest produce entrepreneurs. The data was analysed by measuring the frequencies of occurrence of sets of responses and Pearson's correlation analysis. The findings revealed that commercial forestry is effective in contributing to the promotion of sustainable household income but there has been, inadequate public awareness, lack of seeds/planting stocks and funds. The study recommended that continuous awareness creation be conducted and assistance in terms of inputs be extended to this community to encourage commercial forestry and improve household income.**

**Key words:** Commercial forestry, sustainable household income, Northern Uganda

## **INTRODUCTION**

The quality of socio-economic welfare has become an issue of concern the world over, especially in developing

countries. This has led to the development of various socio-economic programmes, including the promotion of forestry. In recognition of the role of forestry in the sustainable development of the economy, society and the environment, the advance of commercial forestry has been one of the innovations aimed at reducing poverty, improving livelihoods and developing the economy (United State Agency for International Development

[USAID], 2009; Ministry of Finance, Planning, and Economic Development [MFPE], 2004; Ministry of Lands, Water, and Environment [MLWE], 2001). The Uganda Forestry Policy (2001) includes policy statements specific to the development of the commercial forestry. Although commercial forestry and other socio-economic opportunities exist for improving livelihoods and reducing poverty in Uganda, in Northern Uganda the quality of socio-economic welfare has remained low.

Commercial forestry in this study is specifically used to refer to the establishment, management and utilization of forest plantations, tree nurseries, farm forests, and urban forests for socio-economic benefits.

Commercial Forestry Policy in particular, is used in this study to refer to the plan of action for the development of commercial forestry (Grove (1998)

The term sustainable relates to the utilization of resources by the current generation in a way that makes the resources optimally available for the wellbeing of the future generations according to the United Nations Environment Programme [UNEP], and World Wide Fund for Nature [WWF], 1991)

Socio-economic welfare is a concept which is derived from two words, that is, socio-economic and welfare. According to Lundquist, Nilsson, and Zackrisson (1997), socio-economic is a term that relates to social and economic factors, such as family income, employment, consumption, asset base (i.e. ownership of lands or trees, savings and stores, literacy and good relationship) and basic services (i.e. schools, healthcare, public transport and communications).

Prabhu (2001) reported that socio-economic is the measure that enhances the social capability, ensures economic security and enables the vulnerable sections of the society to survive; with the resultant improvement in livelihoods and reduction of poverty.

In Uganda forestry provides a wide range of benefits to government, local communities and the private sector (MLWE, 2001). These benefits from forestry, according to Smith and Scherr (2002), include varieties of forestry related products and services, income, employment, assets, improvement of education and healthcare services, and infrastructure development.

Realization of the above socio-economic benefits requires an effective Forestry Policy and laws that can direct and guide forestry interventions, influence markets and guide the decisions and behaviours of consumers, land users and managers (FAO, 2003; MLWE, 2001). Such policy must be adequately translated into operational tactics, strategies and programmes at the local and the national level (Turyahabwe and Banana, 2008). This is because; implementing appropriate policies, legislations and institutional arrangements result in widespread economic, social and environmental benefits (Yasmi, Broadhead, Enters, and Genge, 2010).

At the international and the national level, the development of the Forestry Policy has gone through a

series of changes with varying impacts on the socio-economic welfare of the public. According to McDermott, O'Carroll, and Wood (2007); Cambodia's Ministry of Agriculture, Forestry, and Fisheries [CMAFF] (2007), at the international level, forestry policy was formulated, coordinated and reviewed by the International Panel on Forests [IPF], International Forum on Forests [IFF] and the United Nations Forum on Forests [UNFF]. One of the global objectives of the Forest Policy is to enhance forest-based economic, social and environmental benefits with the view of improving the livelihoods of the forest dependent people (CMAFF, 2007; Chaytor, 2002).

The IPF, IFF, and the UNFF's forest policy proposal for action placed emphasis on the protection of local benefits, reduction of rural poverty, support of the indigenous knowledge and public participation of local people including women (McDermott et al., 2007). On the contrary, the policy did not adequately promote socio-economic benefits in different parts of the world due to limited funds for policy implementation, insufficient knowledge, skills and experience, and poor public participation and lack of support from various stakeholders (CMAFF, 2007).

In Uganda, Forestry Policy and legislation, as well as their impact and outcomes on the forest sector and livelihoods of local people have greatly evolved from the pre-colonial times up to the present. During the pre-colonial era, there was no formal (read written) Forest Policy. Localized tribal kingdoms ensured environmental regulations through a system of customary controls; human needs and resource availability were kept in balance by the subsistence mode. This mode was sustained by low impact hunting, gathering and long rotation shifting cultivation; hence people lived in harmony with nature (Demere, cited by Madondo, 2003).

The first Forestry Policy in Uganda was formulated in 1929 by the colonial administrators during the Colonial Forest Service (1898-1961), characterized by a highly regulatory, centrally controlled and industry-biased policy with limited local community participation (Turyahabwe and Banana, 2008; Madondo, 2003; Mogaka, Simons, Turpie, Emerton, and Karanja, 2001). Promotion of socio-economic welfare was not the primary goal of the policy and, as a result, it had little impact on the wellbeing of the local people (Madondo, 2003).

The forestry policy review of 1948 emphasized capital accumulation, environmental protection and conservation at the expense of livelihoods and other interests of the indigenous people, hence directing benefits to local authorities (Madondo, 2003; Mogaka et al., 2001). The policy also denied peasant communities access to extract forest resources on private lands other than for subsistence needs (Nyangabyaki, cited by Madondo, 2003).

The Post Colonial Forest Policy of 1962 and the 1980s upheld the colonial status quo, underplayed the participation of the local communities and therefore did

not adequately promote the socio-economic welfare of the local population (Mogaka et al., 2001).

The forestry policy review of 1988 had limited guidance on the principles and strategies for implementation, excluded local communities adjacent to forests and was also silent on the roles of the private sector and rural communities in forestry. This led to limited impact on the improvement of livelihoods and the reduction of poverty (Nyangabyaki, cited by Madondo, 2003; MLWE, 2001; Mogaka et al., 2001).

According to Langoya et al. (2009), there are currently various policies and laws conducive for forestry development. The National Forestry Policy (2001), for example, provides directions for sustainable management of forests in order to achieve increases in economic, social and environmental benefits for all Ugandans. The policy is required to be implemented in partnership and in collaboration with various stakeholders, including but not limited to local communities, the private sector, NGOs/CBOs, local and central government, and the international communities.

Other important policies supportive for the developments of the forestry sub-sector include: the National Environment Policy (1994), and the Local Government Decentralization Policy (1997). On the other hand, there are also various laws that reinforce the Forestry Policy in supporting the development of the forestry sub-sector. The most important of these laws are the National Forestry and Tree Planting Act, 2003, which is the principle law for sustainable management of forests; the National Environment Act (1995); and the Local Government Act (1997).

The current (Uganda) Forestry Policy (2001), emphasizes multiple use forestry, multiple stakeholders roles and collaboration. It also has the vision and goals

which emphasize economic prosperity and social benefits from forests and trees for all the people of Uganda, especially the poor and the vulnerable (Madondo, 2003; MLWE, 2001). The Forestry Policy is, therefore, meant to address the issue of poverty alleviation, livelihood improvement and prosperity; with specific policy statements such as policy statements on forest conservation, commercial forest plantations, among others.

The commercial forestry policy statements in the Uganda Forestry Policy (2001) are specifically designed to direct and guide the development of commercial forestry initiatives (i.e. forest plantations, farm forestry, urban forestry, and supply of tree seeds and planting stocks [Policy Statements 3, 6, 9, and 11] respectively (MLWE, 2001). The development of the above commercial forestry initiatives is expected to contribute to poverty reduction, livelihoods improvement and the economic prosperity of the society through the provision of income, employment, capital assets, forest products and services (MLWE, 2001; Scherr, White and Kaimowitz, 2001).

However, the quality of the above socio-economic benefits depends on the effectiveness of the Commercial Forestry Policy; as it (the policy) directs and guides the development of the commercial forestry initiatives (Yasmi et al., 2010; Turyahabwe and Banana, 2008; MLWE, 2001). This implies that, an effective Commercial Forestry Policy in an area would support the development of commercial forestry, which together with other socio-economic programmes would therefore improve the quality of community livelihoods, reduce the level of poverty and develop the economic capability of the society in the area. As a result, any area or region with an effective Commercial Forestry Policy would promote, among others, the best nutrition status, good housing quality, with abundant supply of basic services, asset base and other indicators of human wealth.

## **Literature Review**

### **Public Involvement in Commercial Forestry for the Promotion of Social-economic Welfare**

According to Charter and Gronow (2005), public involvement in forestry has been associated with increased public awareness, maximizing the total benefits and costs sharing of forests and, the enhancement of the social acceptance of sustainable forestry.

FAO, UNECE and ILO (2000) also reported that public involvement in forestry enables the public to secure access to forest resources, promotes local decision making, good governance and better protection of forest resources.

According to FAO, UNECE and ILO (2000), lack of public interest, under-representation by women and

young people in forestry matters and public participation in other socio-economic opportunities more than forestry also limit public involvement in forestry. Although, a gender-balanced participation in forestry improves decision making, management and utilization of forest resources (Sun, Mwangi, and Meinzen-Dick, 2010), integrating gender participation in forestry is sometimes constrained by the perception that forestry is a male-dominated profession (Mai, Mwangi, and Wan, 2011).

In a study conducted on the development of ecotourism and conservation projects in Budongo forest reserve, Mid-western Uganda, a number of benefits the local people got from their involvement in those projects were identified. The benefits included material support to local primary schools, employment of people in the ecotourism project and income earnings from the sales of handicrafts (Langoya and Long, 1997). The above authors further revealed that the knowledge of the local people about

conservation initiatives improved, collaborative forest management expanded and local communities were also trained in income generating activities as a result of the ecotourism project.

In a study conducted to assess the efficacy of Forestry Conservation Policy on rural livelihoods in Uganda, a number of issues related to public involvement in forestry conservation were identified. Citing the case of the rural people around Mabira Forest Reserve in Mukono district; Agea, Obua, and Fungo (2009), reported that the 2001 Forest Policy is not a panacea for addressing forest conservation issues in Uganda. The authors further revealed that nearly all the people around the forest reserve did not know the intents of the Forestry Conservation Policy. In addition, their capacity in terms of training to manage forest resources was generally weak. The above revelations imply that the level of the forest reserve adjacent local communities' involvement in forestry conservation was generally lower than expected.

In a forestry outlook study conducted in Uganda, a number of factors have been reported to influence public involvement in forestry. These factors include the need to achieve the Uganda's Vision 2025 and the Uganda's Forestry Sector Vision (Kanabahita, 2001). The Vision 2025 for Uganda is that of "a prosperous people, harmonious nation and a beautiful country" (Toure, D., 2005) and the Uganda Forestry Sector has the vision of "a sufficiently forested, ecologically stable and economically prosperous Uganda" (MLWE, 2001).

These studies were mainly based on the development of ecotourism and conservation projects in a natural and conservation forest, not on the development of commercial forestry projects in a man-made forest. The geographical scope of the studies was also mainly in Mid-western and Central Uganda where land is relatively scarce and the population have a higher standard of living compared to Northern Uganda,

### **Effectiveness of Commercial Forestry in Contributing to the Promotion of Sustainable Household Income**

Effectiveness of Commercial Forestry Policy is the ability of the policy to direct and guide the development of commercial forestry in providing forestry products, services and other socio-economic benefits. This is very important because benefits from forestry improve livelihoods, reduce poverty and contribute to increases in the economic, social and environmental benefits (MLWE, 2001).

According to Nyangabyaki, cited by Madondo, (2003); MLWE, (2001); Mogaka et al., (2001), the Uganda forestry policy review of 1988 had limited guidance on the principles and strategies for implementation, excluded local communities adjacent to forests and was also silent on the roles of the private sector and rural communities in

forestry; these, led to limited impact on the improvement of livelihoods and the reduction of poverty

According to FAO (2008), the multi-dimensional nature of forestry, the scattered nature of forestry data across different ministries and the fact that there is no price value for a range of forestry products and environmental services make it difficult to assess the effectiveness of forestry in promoting socio-economic welfare. This implies that the effectiveness of forestry cannot be easily quantified but it can be estimated and described.

According to Agea et al. (2009), for communities around Mabira forest reserve in Central Uganda, less than 78% of the population derive socio-economic benefits from forestry. This implies that the effectiveness of Forestry Conservation Policy in promoting socio-economic welfare of the communities adjacent to the forest reserve is correspondingly below 78%.

Kaggwa et al. (2009) reported that, in Uganda, between the years 2002 – 2006, forestry's contribution to GDP was estimated at 6% and the proportion of cash income from forestry accruing to forest adjacent communities was estimated at 11 – 27 %. The authors further reported that approximately 1 million people were employed in the formal and informal forestry sector in Uganda.

Langoya et al (2009) reported that, numerous forestry products and services that support economic growth, create jobs and contribute to livelihoods of most people in Uganda has been growing at the rate of 5.7% per annum during the period 2001/02 to 2005/06). This implies that the effectiveness of forestry in promoting socio-economic benefits in general in Uganda was equally growing at the corresponding rate during the same period.

According to Langoya, et al (2009); Agea, Obua, and Fungo (2009); FAO (2006); MLWE (2001), forestry policies enable sustainable conservation of forests, expands commercial forestry, increases tourism and other socio-economic opportunities which can alleviate poverty, improve rural livelihoods and develop the national economy.

While the rate of growth of the forest products and services have been reported in many parts of Uganda nothing has been reported about Northern Uganda with vast arable land suitable for commercial forestry. In addition, the reports did not reveal explicitly the effectiveness with which the above rate of growth of forest products and services were contributing to the promotion of sustainable household income.

### **Factors that affect Implementation of Commercial Forestry Policy**

A number of factors have been reported by different authors to hinder implementation of Forestry Policy in promoting socio-economic welfare. At the international level, it was reported that utilizing forests to finance public

**Table 1.** The Study sample

Serial No.	Categories	Numbers	Percentage
1	Opinion leaders at the local community level	25	19.69
2	Local government leaders and personnel	49	38.58
3	Private tree farmers	19	14.96
4	NFA staff	10	7.87
5	Forestry-related NGOs' staff	11	8.66
6	Forest produce entrepreneurs	13	10.24
	Total	127	100.00

Source: Researchers, 2012

**Table 2.** Respondents by age group

Age group	Frequency	Percentage	Cumulative Percentage
19 and below	1	1.00	1.00
20 to 29	24	23.80	24.80
30 to 39	37	36.60	61.40
40 to 49	27	26.70	88.10
50 to 59	12	11.90	100.00
<b>Total</b>	<b>101</b>		

Source: Researchers, 2012

investments and inadequate local stakeholders' participation in forestry limit the effectiveness of forestry in promoting socio-economic welfare (Scherr, White, and Kaimowitz, 2003). In addition, the same authors reported that the fear for the long term maturity period of forests also limits public involvement and the effectiveness of forestry in promoting socio-economic welfare.

In commercial forestry, based on experiences from the indigenous territories in Bolivia; Nebel, Jacobsen, Quevedo and Helles (2003) reported that the lack of financial resources and weak cultural, background, knowledge and capability competencies limit public involvement and the realization of socio-economic welfare from commercial forestry. These findings also have a number of limitations.

According to Mayers (2006), lack of public awareness, inadequate rights and lack of local decision making are the major challenges limiting the effectiveness of commercial forestry in reducing poverty. These findings were based on a paper prepared for "The Forests Dialogue (TFD)" secretariat at Yale University, USA; based on experiences and opinions discussed at the "Scoping" dialogue in Richard Bay, South Africa in 2006.

In a study conducted in 15 countries in Eastern and Central Africa, Uganda inclusive, a number of factors have also been identified to hinder the implementation of Forestry Policy in promoting socio-economic welfare. These factors include inadequate economic incentives, the command and the control approach to and over-centralization of forest management and the lack of benefits sharing with the local communities (Mogaka, et al., 2001).

According to Agea et al. (2009), many factors are

responsible for the ineffectiveness of Forestry Conservation Policy in contributing to the promotion of socio-economic welfare of local communities around Mabira forest reserve. These factors were mentioned to include weak capacity of the communities to manage forests for their livelihoods, lack of clarity on the forestry policy intent, inadequate training on forestry conservation and the theoretical nature of the Forestry Policy. These findings were limited by the fact that the subject scope of the study was on "Forestry Conservation Policy in a natural forest", and not on "Commercial Forestry Policy in man-made forest.

According to Kaggwa, et al. (2009), inadequate political will to deal with illegal forest activities and encroachment of forests limit the effectiveness of forestry in contributing to the promotion of socio-economic welfare in Uganda.

Most of these findings were limited by the fact that the data for the studies were collected by examining existing literatures from the Environment and Natural Resources Sector Lead Agencies in Uganda. These were supplemented with semi structured interviews administered to personnel and leaders of forestry lead agencies only in Uganda in general.

The views of local communities, local leaders and the private sector involved in forestry were not mentioned to have been included in the data collected for the study.

## RESEARCH METHODOLOGY

### Research Design

A Cross-sectional survey design was used. This involved

**Table 3.** Respondents by the Organization or activity they work in

		Frequency	Percentage	Cumulative Percentage
Valid	Local government	49	48.00	48.00
	Private tree farming	19	18.60	66.60
	National Forestry Authority	10	9.80	76.40
	Other forestry-related organization (FAO and Tree Talk)	11	10.80	87.20
	Forest produce business	13	12.80	100.00

Source: Researchers, 2012

**Table 4.** Level of public involvement in commercial forestry for the promotion of Socio-economic welfare in Northern Uganda

	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Percentage agreement
Communities participate in tree planting & management	0.98	7.84	5.88	70.59	14.71	<b>85.29</b>
Communities produce tree seedlings & planting stocks	1.98	28.71	8.91	57.43	2.97	<b>60.40</b>
Communities integrate tree planting with agricultural crops	0.98	30.39	14.71	47.06	6.86	<b>53.92</b>
Communities plant & maintain green belt of trees in urban centres	13.00	54.00	12.00	16.00	5.00	<b>21.00</b>
Communities participate in Collaborative Forest Management	7.92	29.70	6.93	42.57	12.87	<b>55.45</b>
Commercial private tree farmers are active	0.98	6.86	3.92	80.39	7.84	<b>88.24</b>
Communities conduct forest produce businesses	0.99	0.99	0.00	64.36	33.66	<b>98.02</b>
Forestry enterprises employ some community members	2.97	7.92	10.89	69.31	8.91	<b>78.22</b>
Average	3.73	20.80	7.91	55.96	11.60	<b>67.57</b>

Source: Researchers, 2012

selection of the study samples from different categories of the study population, which were studied for the same attributes at the same point in time.

This study was conducted in Northern Uganda in villages adjacent to forest reserves where commercial forestry is being implemented.

### Study Population

The study targeted Local Government Authority, especially the local council executive committee members on production/environment and employees of the Directorate of Natural Resources at the district and the sub-county/division level, personnel of forestry-related organizations, which included National Forestry

Authority, FAO and Tree Talk. The target population also included the private tree farmers, forest produce entrepreneurs and opinion leaders at the local community level in Northern Uganda.

### Sample size

The target population for this study had a total number of 200 participants which included 39 opinion leaders at the local community level, 77 leaders and personnel of local government authority, 30 members of the commercial private tree farmers, 16 and 17 employees of NFA and forestry-related organizations (i.e. FAO and Tree Talk) respectively, and 21 timber business entrepreneurs. Using the Krejcie and Morgan (1970) table for

**Table 5.** Effectiveness of commercial forestry in contributing to the promotion of household income in Northern Uganda.

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Not sure</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>% agreement</b>
Community members own trees and forests for income	6.86	26.47	5.88	54.90	5.88	<b>60.78</b>
Community members sell tree seedlings and planting stocks for income	3.92	28.43	12.75	51.96	2.94	<b>54.90</b>
Private tree plantations present potential sources of income	2.94	12.75	6.86	71.57	5.88	<b>77.45</b>
Farm forestry offers multiple benefits to farmers	4.90	17.65	7.84	52.94	16.67	<b>69.61</b>
Collaborative Forest Management provides income to some community members involved	4.95	8.91	9.90	63.37	12.87	<b>76.24</b>
Forestry enterprises provide employment and income to community members	6.93	5.94	3.96	77.23	5.94	<b>83.17</b>
Businesses in forest produce provide substantial income	1.98	7.92	0.99	61.39	27.72	<b>89.11</b>
Urban forests present potential sources of income	14.85	44.55	8.91	26.73	4.95	<b>31.68</b>
Forests and trees are effective in providing household income	2.00	22.00	10.00	53.00	13.00	<b>66.00</b>
<b>Average</b>	<b>5.48</b>	<b>19.40</b>	<b>7.46</b>	<b>57.01</b>	<b>10.65</b>	<b>67.66</b>

Source: Researchers, 2012

determining sample size for research activities, the sample size for the study was therefore 127 participants.

### Sampling Techniques

The study used simple random and purposive sampling techniques. The research needs and type of data required warranted the use of these sampling techniques.

The leaders and personnel of local government authority and opinion leaders at the local community level were selected using the simple random sampling. This was to ensure that every member of the population have equal chance of being selected for the study.

Purposive sampling technique was used for selecting parishes and villages adjacent to forest reserves;; private tree farmers; forest produce business persons; personnel of NFA, FAO and Tree Talk; leaders and personnel of local government authority at the district level; and opinion leaders at the community level. In addition, three forest reserves in the three parishes sampled were also chosen by purposive sampling technique.

In the purposive sampling technique, samples are selected on the basis of the knowledge that the individuals have about the information being sought.

### Data Collection Techniques

The study used self-report technique. In self report technique, respondents are expected to report their views, opinions, perceptions or attitudes about an issue of interest (Odiya, 2009). The self-report technique

therefore consisted of questionnaire survey and interview survey. Other factors which guided the choice of the technique were the nature of the respondents and the size of the target population against the available space and time.

### Validity of instruments

In order to ensure that, the research instruments collected appropriate responses, Content Validity Index was used. Three experts were asked to rate each item of the instruments for validity by checking whether it is "relevant", "quite relevant", "irrelevant" or "quite irrelevant". All items of these research instruments whose calculated validity was lower than 0.6 were rephrased and adjusted.

### Reliability of instruments

In this study, test-retest reliability was used. This involved the collection of data from the same and few selected respondents using the same instruments at different points in time. Items of the instruments whose reliability was found to be less than 0.700 were adjusted.

### Data Analysis

Data were sorted, filed and coded, and then analysis was carried out accordingly. When the data were sorted and filed they were coded by assigning numbers to classify

**Table 6:** Correlation between the level of public awareness, public involvement and the effectiveness of commercial forestry

		1	2
1.	Public involvement in commercial forestry for the promotion of socio-economic welfare	Pearson Correlation Sig. (2-tailed) N	1
2.	Commercial forestry policy is effective in contributing to the promotion of sustainable household income	Pearson Correlation Sig. (2-tailed) N	.288(**) .003 102

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Source: Researchers, 2012

**Table 7.** Challenges to raising tree seedlings and planting stocks in Northern Uganda

	No percentage	Yes percentage
Lack of seeds and materials	27.50	72.50
Lack of money	34.30	65.70
Lack of knowledge and skills	22.50	77.50
Poor perception	72.50	27.50
Involvement in other IGAs	60.80	39.20

Source: Researchers, 2012

responses into limited categories that are appropriate to the research questions. Both quantitative and qualitative data were coded by assigning numbers. This enabled the researchers to make easy comparison.

The results of the analyses were presented by the use of frequency distributions tables and pie charts. The use of tables was felt necessary in order to produce good summaries of the data that would enable making interpretation easy. The use of pie charts was meant to provide visual characteristics of the data and also to enable easy interpretation.

Pearson's Correlation analysis was also used to find out whether any relationships exist between the level of public involvement in commercial forestry; and the effectiveness of commercial forestry in contributing to the promotion of sustainable household income.

### Background Characteristics of Respondents

Table 2 above, shows the age bracket of respondents who took part in the study. The majority of the respondents were in the age bracket of 30 to 39 years and the least number were in the age bracket of 19 and below.

Table 3 above shows a fair representation of respondents who participated in the study by the organization or activity they work in. Most of the respondents consisted of leaders and personnel of the Local Government. This was followed by the commercial

private tree farmers, forest produce entrepreneurs and personnel of forestry-related organizations. The least number of respondents were from NFA. Local Government leaders and personnel were expected to be having adequate knowledge about the effectiveness of Commercial Forestry Policy in the areas they represent or work.

### Level of public involvement in commercial forestry for the promotion of socio-economic welfare

The research was intended to specifically investigate the extent to which people in Northern Uganda participate in and /or support the establishment, management and utilization of commercial forestry (i.e. forest plantations, tree nurseries, farm forestry and urban forestry) for socio-economic welfare, and whether there is any relationship between the level of public involvement in commercial forestry for the promotion of socio-economic welfare and the level of awareness the public has about Commercial Forestry.

From the summaries of responses, the average percentage agreement by participants about the level of public involvement in all the commercial forestry initiatives considered in this study was above 50% (i.e. 67.57%). This implies that, the level of public involvement in commercial forestry is generally high. Involvement in forest produce enterprises/businesses had the highest percentage agreement of 98.02%,

**Table 8:** Challenges to tree planting and management in Northern Uganda

	No percentage	Yes percentage
Inadequate funding	43.10	56.90
Lack of seedlings and planting stocks	34.30	65.70
Lack of land	62.70	37.30
Fear of the long maturity period of trees	52.00	48.00
Low public interest in tree planting	61.80	38.20
Women and children are under- represented	70.60	29.40
Lack of awareness on income benefits of forests	44.10	55.90
Negative public perception about tree planting	67.60	32.40
Lack of money for expenses involved	41.20	58.80

Source: Researchers, 2012

followed by commercial private tree farming, tree planting and management, employment in forestry enterprises, production of tree seedlings and planting stocks, Collaborative Forest Management and Farm Forestry with corresponding percentage agreements of 88.24%, 85.29%, 78.22%, 60.40%, 55.45%, and 53.92% respectively. It is only Urban Forestry which was reported to be having the lowest level of public involvement with a percentage agreement of only 21.00%.

The above findings are in agreement with the findings from interviews where participants agreed that people in Northern Uganda are involved in almost all the above commercial forestry initiatives, with the exception of urban forestry which is not applicable in rural villages.

#### **Effectiveness of commercial forestry in contributing to the promotion of sustainable household income**

The research was intended to specifically analyze the effectiveness of commercial forestry in contributing to the promotion of household income, establish the forest produce people in Northern Uganda get from commercial forests for generating household income. It was also to analyze whether the effectiveness of commercial forestry in contributing to the promotion of household income will improve sustainably. Furthermore, the research was also intended to establish whether there is any relationship between the effectiveness of commercial forestry in contributing to the promotion of sustainable household income and, the level of public involvement in the commercial forestry and the level of public awareness about the Commercial Forestry Policy and its socio-economic objectives in Northern Uganda.

Summary of responses from 102 respondents to questionnaires on sets of questions on the effectiveness of commercial forestry in contributing to the promotion of household income in Northern Uganda, are presented in Table 5.

From Table 5, business in forest produce was found to

be the most effective in contributing to the promotion of household income in Northern Uganda, with a percentage agreement of 89.11% of the participants. This was followed by employment in forestry enterprises, commercial tree plantations, collaborative forest management, farm forestry, community woodlots and sales of tree seedlings/ planting stocks with corresponding percentage agreements of 83.17%, 77.45%, 76.24%, 69.61%, 60.78% and 54.90% respectively. It is only urban forestry which was found to be less effective in contributing to the promotion of household income, with a percentage agreement of only 31.68%. The summary of the average percentage agreements from all the various commercial forestry initiatives was found to be 67.66%, according to participants.

According to participants interviewed, commercial forestry was revealed to be moderately effective in providing household income, with business in forest produce, employment in forestry enterprises and plantation forestry reported to be playing significant roles in providing household income.

Based on the data generated and analysed from both the questionnaires and the interviews, it was therefore concluded that commercial forestry is effective in contributing to the promotion of household income in Northern Uganda.

To find out whether there is any relationship between the effectiveness of commercial forestry in contributing to the promotion of sustainable household income and, the level of public involvement in the commercial forestry, Pearson's correlation analysis was carried out.

The results of the Pearson's correlation analysis shows that there is a positive relationship between the effectiveness of commercial forestry in contributing to the promotion of sustainable household income and the level of public involvement in commercial forestry was revealed. The relationship was significant at the level of 1% (Sig. (2-tailed) is less than 0.01, i.e. 0.003). This implies that the effectiveness of commercial forestry in

**Table 9.** Challenges to household income earning from commercial forestry

	No percentage	Yes percentage
Government is the primary owner	71.60	28.40
Command & control approach	70.60	29.40
Lack of benefits sharing	47.10	52.90
Agriculture & settlement	31.40	68.60
People own no trees	56.90	43.10
Poor involvement in forestry	51.00	49.00
Involvement in other IGAs	52.00	48.00

Source: Researchers, 2012

contributing to the promotion of sustainable household income is significantly and directly attributed to the level of public involvement in the commercial forestry.

### Factors affecting implementation of the current Commercial Forestry Policy

This section was specifically intended to explore the challenges to public involvement in Commercial Forestry and its socio-economic objectives. It was also intended to explain the challenges to collaborative forest management including urban forestry, farm forestry, and forest produce business in Northern Uganda. This is because the above mentioned initiatives are the commercial forestry initiatives which form the basis for the commercial forestry policy statements.

Summaries of responses in Table 7 indicate that lack of knowledge and skills for raising tree seedlings/planting stocks, lack of seeds and other nursery materials, and lack of money to meet the expenses involved in the work had the highest percentage agreements of 77.50%, 72.50%, and 65.70% respectively. As a result, they are considered to be the major challenges to raising tree seedlings/planting stocks. On the other hand, poor public perception about raising tree seedlings and planting stocks, and public involvement in other income generating activities had below average percentage agreements of only 27.50% and 39.20% respectively; hence they were not considered to be the major challenges to raising tree seedlings/planting stocks according to the participants.

Summaries of responses in Table 8 showed that lack of seedlings and planting stocks, lack of funds to meet expenses involved in tree planting and management, inadequate funding for tree planting, and lack of public awareness about the income benefits of tree planting and management had high corresponding percentage agreements of 65.70%, 58.80%, 56.90, and 55.90%, respectively. According to participants interviewed, it is mainly lack of funds and lack of public awareness which

are the main challenges to tree planting and management.

The above findings therefore implied that the major challenges to public involvement in tree planting and management are lack of seedlings and planting stocks, lack of funds to meet the expenses involved in the tree planting and management, inadequate funding for tree planting and lack of public awareness about the income benefits of tree planting and management.

On the other hand, under-representation by women and children in forestry matters, negative public perception about tree planting, lack of land, low public interest in tree planting and the fear for the long term maturity period of trees had corresponding percentage agreements of only 29.40%, 32.40%, 37.30%, 38.20% and 48.00% respectively. Although these challenges cannot be ignored, they were not considered by the study as the major challenges to tree planting and management.

From the summaries of responses presented in Table 9, encroachment of forest estates through agriculture and settlement, and lack of sharing benefits from government owned forest resources had the highest corresponding percentage agreements of 68.60% and 52.90% respectively. The reasons that government is the primary owner of most commercial forestry resources, the command and the control approach to forestry management, people own no trees, involvement in other income generating activities, and poor public involvement in forestry, had percentage agreements of only 28.40%, 29.40%, 43.10%, 49.00% and 48.00% respectively.

Responses from interviewees indicated that, lack of benefit sharing from government owned forest resources was the major challenge to household income earning from commercial forestry. The above results therefore implied that the major challenges to household income earning from commercial forestry are lack of benefits sharing from government owned forests and encroachment of forest estates through agriculture and settlement.

## **DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

### **Level of public involvement in commercial forestry for the promotion of socio-economic welfare**

This study revealed that the level of public involvement in commercial forestry for the promotion of socio-economic welfare is generally high in Northern Uganda. This position was justified by a high average percentage agreement of 67.57% for all the commercial forestry initiatives considered in the study. Involvement in commercial forest produce business had the highest percentage agreement of 98.02%, followed by commercial private tree farming, tree planting and management, employment in forestry enterprises, production of tree seedlings and planting stocks, collaborative forest management, and farm forestry, with corresponding percentage agreements of 88.24%, 85.29%, 78.22%, 60.40%, 55.45%, and 53.92% respectively. Urban forestry had the lowest level of public involvement with a percentage agreement of only 21.00%.

The above revelation is in agreement with MLWE's (2001), and Kanabahita's (2001) reports that public involvement in forestry is influenced by the need to address the issue of poverty and the need to promote the socio-economic functions of forestry such as the provision of employment, income and materials for construction and furniture making, among others. The disparity between this study finding and the above reports is that MLWE (2001) and Kanabahita (2001) reports were based on forestry in general in the whole country of Uganda.

The above finding is also partly consistent with the finding of Charter and Gronow (2005) that public involvement in forestry is associated with, among others, maximising the total benefits and cost sharing of forestry. On the other hand, Charter and Gronow's (2005) finding was based on collaborative forest management only and the main focus was also on South Asia, notably India and Nepal, not in Northern Uganda.

### **Effectiveness of commercial forestry in contributing to the promotion of sustainable household income**

The study revealed that commercial forestry is effective in contributing to the promotion of household income in Northern Uganda. This position was justified by the high average percentage agreement of 67.66% for all the various commercial forestry initiatives considered in the study. Specifically, businesses in forest produce had the highest percentage agreement of 89.11%, followed by employment in forestry enterprises, commercial tree plantations, collaborative forest management, farm forestry, community woodlots and sales of tree seedlings/

planting stocks, with corresponding percentage agreements of 83.17%, 77.45%, 76.24%, 69.61%, 60.78% and 54.90% respectively.

The study also revealed timber, firewood, poles, medicinal plants and charcoal as the major forest produce people get from commercial forests for generating household income, with corresponding percentage agreements of 79.41%, 77.45%, 75.49%, 52.94% and 50.98% respectively. These findings are in agreement with Langoya et al. (2009) findings that forestry in Uganda provides sawn timber, poles, firewood and charcoal for improving rural livelihoods and alleviating poverty.

Langoya et al. (2009) study report did not identify medicinal plants as a forest produce people get from commercial forests for generating household income. It did not also rate the forest produce in terms of which ones are the most commonly provided by forests and the study was also based on forestry in general in the whole country of Uganda. On the other hand, this study revealed fodder and craft materials as the least forest produce people get from commercial forests for generating household income in Northern Uganda, with percentage agreements of only 25.49% and 43.14% respectively.

The study further disclosed that the effectiveness of commercial forestry in contributing to the promotion of household income will improve sustainably. The highest number of participants (75.47%) agreed with the above position. Respondents interviewed argued that since more people are getting involved in commercial forestry, the effectiveness of commercial forestry in providing household income will equally improve sustainably.

The study also revealed that the effectiveness of commercial forestry in contributing to the promotion of household income is directly related to the level of public involvement in the commercial forestry. Pearson's correlation analysis showed significant positive relationship at the level of 1% (sig. (2-tailed) is less than 0.01, i.e. 0.003) between the effectiveness of commercial forestry in contributing to the promotion of household income and the level of public involvement in commercial forestry. This is probably because the more people trade in forest produce, get employed in forestry enterprises, plant and manage trees and forests and, sell tree seedlings and planting stocks, the more household income they will be able to derive from the commercial forestry initiatives.

### **Factors affecting implementation of the current Commercial Forestry Policy**

The study revealed that the lack of knowledge and skills for raising tree seedlings /planting stocks, lack of seeds and other planting materials and, lack of money to meet the expenses involved are the main challenges to raising

tree seedlings and planting stocks. Participants' percentage agreements with the above position were 77.50%, 72.50%, and 65.70% for lack of knowledge and skills for raising tree seedlings/planting stocks, lack of seeds and other planting materials, and lack of money to meet the expenses involved in the work, respectively.

The study further disclosed that the main challenges to planting and managing trees in Northern Uganda are lack of seedlings and planting stocks, lack of funds to meet the expenses involved in the work, inadequate funding for tree planting and lack of awareness creation on the income benefits of tree planting and management. Participants' percentage agreements on the above challenges were 65.70%, 58.80%, 56.90, and 55.90% for lack of seedlings and planting stocks, lack of funds to meet the expenses involved, inadequate funding for tree planting and lack of public awareness creation, respectively.

The study also revealed that the major challenges to household income earning from commercial forestry in Northern Uganda are mainly encroachment on forest estates through agriculture and settlement and, lack of benefit sharing from government owned forest resources with community members, with percentage agreements of 68.60% and 52.90%, respectively. These findings are partly consistent with the findings of Kagwa et al. (2009) that inadequate political will to deal with illegal forest activities and encroachment limit the effectiveness of forestry in contributing to the promotion of socio-economic welfare in Uganda. Kagwa, et al. (2009) findings were based on forestry in general in the whole country of Uganda and respondents in the study also consisted of only personnel and leaders of Natural Resources Lead Agencies.

## CONCLUSIONS

### Level of Public Involvement in Commercial Forestry for the Promotion of Socio-economic Welfare

The study revealed that the level of public involvement in commercial forestry for the promotion of socio-economic welfare is high on average, especially in forest produce businesses and commercial private tree farming. The study also revealed that the level of public involvement in commercial forestry for the promotion of socio-economic welfare is related to the level of public awareness about Commercial Forestry Policy and its socio-economic objectives.

The above implies that the averagely high level of public involvement in commercial forestry in Northern Uganda is attributed significantly by the level of awareness the public have about Commercial Forestry Policy and its socio-economic objectives. It is, therefore, concluded that the level of public involvement in

commercial forestry for the promotion of socio-economic welfare in Northern Uganda is generally high.

### Effectiveness of Commercial Forestry in Contributing to the Promotion of Sustainable Household Income

It was revealed that commercial forestry is effective in contributing to the promotion of household income, with the major forest produce which the public get from commercial forests for generating household income being timber, firewood, poles, medicinal plants and charcoal.

The study also disclosed that, the effectiveness of commercial forestry in contributing to the promotion of household income will improve sustainably. The study further revealed that the effectiveness of commercial forestry in contributing to the promotion of sustainable household income is directly related to the level of public involvement in commercial forestry

It is therefore concluded that promoting commercial forestry can be a leading factor in enhancing sustainable household income in Northern Uganda.

### Factors affecting implementation of the current Commercial Forestry Policy

The main factors/challenges that affect implementation of the current plans/strategies for the development of the various commercial forestry initiatives included raising tree seedlings and planting stocks due to lack of knowledge and skills for raising the tree seedlings/planting stocks, lack of seeds and other planting materials and, lack of money to meet the expenses involved in the work.

Challenges to tree planting and management were mainly lack of seedlings and planting stocks, lack of funds to meet the expenses involved in the work, inadequate funding for tree planting and lack of adequate awareness creation on the income benefits of tree planting and management. Encroachments on forest estates through agriculture and settlement and, lack of benefits sharing from government owned forest resources were, on the other hand, revealed to be the main challenges affecting household income earning from commercial forestry.

In general, it is concluded that Commercial Forestry Policy is effective in contributing to the promotion of sustainable socio-economic welfare in Northern Uganda; with a high level of public involvement in the commercial forestry which is effective in contributing to the promotion of sustainable household income, and there are also major challenges affecting implementation of the current Commercial Forestry Policy in the district.

## RECOMMENDATIONS

### Policy Formulation

Policy strategies and the relevant laws on encroachment of forestry estate (i.e. settlement and agriculture) need to be strengthened and supported by policy makers. This will boost government and private commercial forest plantation development, community woodlots establishment and management, and the effectiveness of commercial forestry in contributing to the promotion of sustainable household income.

### Policy Implementation

These recommendations are considered to be crosscutting to all implementers of Commercial Forestry Policy.

1. Onsite training (e.g. for raising tree seedlings, planting, various silvicultural operations and so on) should be conducted to equip and enhance public involvement in commercial forestry. 1. involvement in commercial forestry.

2. The necessary support, incentives and inputs (e.g. financial support, tree seeds/seedlings) should be availed to steer and promote public involvement in commercial forestry initiatives. This will enable commercial forestry to improve the household income, enable the provision of forest products such as timber, poles, firewood for urban consumption and ensure the provision of ecosystem services such as controlling soil erosion and floods, improving the micro-climate and maintenance of green belt, which are very important for the welfare of the public.

### Suggestions for Further Research

This research initiative could not cover all the relevant aspects of Forestry Policy, given the limited scope. Still it has broken the ground which requires further exploration. A few areas are specifically recommended here for further research.

1. Forestry conservation policy and the promotion of sustainable socio-economic welfare.
2. Forestry policy strategies and the enhancement of Non Timber Forest Products for livelihoods improvement and poverty eradication.
3. Effectiveness of Forestry Policy in relation to other socio-economic policies in contributing to the promotion of socio-economic welfare.

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