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# Willingness to establish private forest plantations among households in Oyo State Nigeria

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## ABSTRACT

This study investigates the willingness of the respondents to establish private forest plantations (PFPs) in Oyo State, Nigeria. Two purposively selected and two randomly selected local government areas were used. One hundred and sixty household heads randomly selected were interviewed using the interview schedule and the data analysis was carried out using both descriptive (frequencies, percentages, mean) and inferential (Chi-Square and PPMC) statistics with  $\alpha_{0.05}$ . The majority of the respondents were male (89.2%), within 41–50 years (43.9%) and 92.8% were married. About 85.6% have knowledge of private ownership and 91.4% had knowledge on forest plantation establishment. Respondents' attitude towards PFPs (78.4%) was favourable. A large percentage (96.4%) agreed that involvement in PFPs serves as income generating activity, whereas 58.3% identified government policy on forestry and land tenure system as major constraints to establishing PFPs. There were significant relationships between age ( $\chi^2 = 236.256$ ), educational qualification ( $\chi^2 = 35.283$ ), primary occupation ( $\chi^2 = 62.944$ ) private ownership ( $r = 0.424$ ), knowledge on forest plantation ( $r = 0.451$ ), perception ( $r = 0.230$ ), perceived benefits ( $r = 0.180$ ), perceived constraints ( $r = -0.181$ ) and willingness to establish PFPs. Respondents possessed high knowledge and favourable attitude towards PFPs despite the perceived constraints. The state, in collaboration with the Forestry Research Institute of Nigeria (FRIN), should initiate programmes to emphasise benefits of PFPs in order to encourage more participation and government policy on land use decree should be reviewed to promote participation in forest plantation establishment.

## KEYWORDS

income generating activities;  
government policy;  
knowledge and attitudes;  
private ownership

## Introduction

Forests play an important role in soil protection, ameliorating the environment, protecting biodiversity and conserving soil and water. Forests are primary terrestrial carbon reservoirs, as well as the most efficient ecosystems to capture carbon dioxide from the atmosphere. Adedokun et al. (2012) reported that one of the most important resources of the Earth is the forest and it is believed that humans cannot survive without trees, especially those that are fruit producing. Ogunwusi (2011) also reported that the role of forests in industrial development and in carbon sequestration is becoming very topical, and that emphasis should be placed on increasing the area under forest cover through plantation establishment.

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The widespread loss of indigenous tree species through the degradation of native forest species and deforestation has been serious threats to the environment that require urgent attention at the national, regional and global level (Spilsberg 2010; Isikhuemen and Ola-Adams 2011). The continuing dependency of the poor living in the rural and urban settings of developing countries on fuel wood for cooking and heating has seriously resulted in degradation of the environment (Arowosoge and Oyerinde 2011). Other factors also contribute towards deforestation, for example, population increase, urbanisation, farming and grazing systems and bush burning.

Deforestation has been identified as one of the factors responsible for climate change. The illegal cutting of trees for firewood and deforestation in general has seriously exposed the surface of the Earth to direct sunlight and unprecedented rainfall, creates a serious threat to the existence of human beings and agricultural crops. Furthermore, most of our indigenous tree species are endangered or extinct, which requires quick intervention and action. There is drastic reduction in the wood supply for making furniture and construction purposes, which has led to a rapid increase in forest timber importation bill and consequently, with subsequent reduction of the nation's gross domestic product.

In recent times, there has been a demand by scholars for a private driven forest plantation, because of the growing concerns about the environmental unsustainability of economic growth patterns and increased forest degradation in Nigeria. Ogunwusi (2011) noted that the decreasing supply of wood coupled with the inadequate management of state plantations have made the necessity for private sector participation in forest plantation to address general shortage of wood in Nigeria. Alamu and Agbeja (2011) emphasised the requirement for a holistic private driven forest plantation that would create a sustainable and progressive growth in the forest industry.

The continued and sustained level of wood consumption in Nigeria is indeed a threat to the forest estate, as a result of deforestation, which is now a serious problem. Unemployment, which is a detriment to the national development, would be decreased if households are willing to establish forest plantations. However, planting of trees or establishment of tree plantation can serve as a means of reversing or curtailing deforestation.

Reforestation or afforestation is a means of planting trees in a planned way and very necessary to the environment. Trees slow rapid flow of rainwater and thereby prevent the occurrence of severe flooding in our rivers, at the same time providing communities with fuel and timber. Matthies and Karimov (2014) observed that tree planting has been among the measures to diversify livelihoods, create alternative income, and increase biomass supply. They further stressed that a greater proportion of farmers are converting their crop and grazing land into forestland for higher financial returns. The demand and consumption of wood for timber and fuel are one of the most important factors driving households' decisions to plant trees (Emtage and Suh 2004).

Past governments in Nigeria promulgated tree-planting policies to encourage the participation by individuals in planting of trees as a means to improve livelihoods at the household level by contributing to the physiological, sociological and economic well-being of individual households and entire society at large. In order to determine the feasibility of implementing this policy, there is a requirement to examine whether households are willing to participate in the establishment of forest plantations. This is pertinent, because it should bring about economic development and it also serves as means for

diversification of the livelihoods of households, together with the benefit of environmental conservation. Accordingly, the objectives of the study included:

- determining the personal characteristics of the respondents;
- determining the knowledge of private ownership of forest plantation among respondents;
- examining the perception of respondents towards establishment of private forest plantation;
- ascertaining the perceived benefits of private forest plantation; and,
- identifying the perceived constraints to forest plantation establishment among respondents.

## Materials and methods

The study was carried out in Oyo State, which consists of 33 local government areas and it is located between latitudes 6.5° and 9.0° N and between longitudes 3.0° and 5.0° E, in the rain-forest vegetation belt of Nigeria. The state has an estimated population of about 5.5 million (National Population Commission 2006). The population of the study comprised households in the selected local government areas of the state. Multistage sampling procedure was used in this study. Using purposive sampling, two local government areas (LGAs) Ido and Oluyole, with two wards each, were selected from the Ibadan metropolis, based on their proximity and prevalence of forest reserve activities in the areas. In addition, two wards each were randomly selected from two other randomly selected LGAs (Ibadan North-West and Ibadan South-West) to give a total of eight wards from four LGAs. Two communities each were randomly selected from each ward to give a total of sixteen communities. Ten household heads were purposively selected for interview in each community, based on the fact that they are mostly financially capable and their decisions are always binding on other household members. This provided a total of 160 respondents. However, only 139 questionnaires were retrieved (constituting 86.4% recovery rate) and subjected to analysis. Data were obtained with the use of interview schedule. Knowledge of private ownership of forest plantation (e.g. “Do you know that individual or private organisation can establish forest plantation?”, “Prenursery germination of seedlings is important to ensure viability of the seeds”, “Soil tests are very important in establishment of FP, in order to know the nutrients in the soil”) was measured on a two-point scale of “yes” and “no”, with scores of 1 and 0 assigned for correct and wrong answers, respectively. The mean score was used to categorise respondents’ knowledge into high and low. A Likert-type scale was used to measure respondents’ attitude towards establishment of private forest plantation on a five-point scale of strongly agreed (SA), agreed (A), undecided (U), disagree (D) and strongly disagreed (SD), with scores of 5, 4, 3, 2, 1 assigned to each, respectively, for positive statements and the scores were reversed for negative statements. The mean score was used to categorise respondents’ attitude into “favourable” and “unfavourable”. Perceived benefits of private forest plantation (e.g. “Establishment of forest plantations can serve as an income generating or diversifying activity”, “Forest plantations can be used for land demarcation and landscaping”) was measured on a five-point scale of SA, A, U, D and SD, with scores of 5, 4, 3, 2, 1 assigned to each, respectively, for positive statements and the scores were reversed for negative statements. The mean score was used to categorise perceived benefits into “high” and “low”. Constraints to private forest plantation establishment was measured on a three-

point scale of “major constraint”, “minor constraint” and “not a constraint”, with scores of 2, 1 and 0 assigned, respectively. The constraints were then ranked using their mean scores. Willingness to establish private forest plantation was measured with 17 items, statement such as “I will like to practice agroforestry where arable crops will be planted within the trees”, using a three-point scale of “agree”, “undecided” and “disagree”, with scores of 3, 2 and 1 assigned, respectively. Items on each scale were summed to derive a willingness index, and the mean score was used to categorise willingness into “high” and “low”. Scores below the mean were categorised as “low”, whereas those within and above the mean were categorised as “high”. Data was analysed using descriptive statistics such as frequencies, percentages, mean, standard deviation and inferential statistics such as Chi-square and Pearson Product Moment Correlation at 0.05 level of significance.

## Results and discussions

### *Personal characteristics of respondents*

The personal characteristics of the respondents are shown in Table 1. Findings showed that the mean age of respondents was  $48.6 \pm 7.9$  years and about half (43.9%) of the

**Table 1.** Distribution of respondents based on personal characteristics.

Variables	Frequency	Percentage	Mean
Age groups: (years)			$48.6 \pm 7.9$ years
21–30	2	1.4	
31–40	22	15.8	
41–50	61	43.9	
51–60	48	34.5	
61–70	6	4.3	
Sex:			
Male	124	89.2	
Female	15	10.8	
Marital status:			
Single	2	1.4	
Married	129	92.8	
Divorced	1	0.7	
Widowed	7	5.0	
Education:			
No formal education	4	2.9	
Primary education	11	7.9	
Secondary education	36	25.9	
Tertiary education	88	63.3	
Primary occupation:			
Farming	26	18.7	
Lumbering	2	1.4	
Fishing	2	1.4	
Artisan	2	1.3	
Teaching	28	15.8	
Civil servant	51	36.7	
Trading	6	4.3	
Retiree	1	0.7	
Banker	1	0.7	
Household size:			
1–3	31	22.3	
4–6	87	62.6	
7–9	19	13.7	
10–12	2	1.4	

Source: Field survey 2017

respondents were within the age group of 41–50 years. This age bracket is expected to be ambitious and energetic, energies that they can actively channel into the various activities of forest plantation. Lawal-Adebowale et al. (2010) stated that individuals within this age range are relatively young and active enough to be involved in such activity. Additionally, majority (89.2%) of respondents were male, which shows that most households were headed by males in the study area. Their involvement can serve as motivation to other members of the household. Lawal-Adebowale et al. (2010) observed that most households practicing related activities have been found to be headed by males. Concerning marital status, 92.8% were married, most of them (62.6%) possessed household sizes of 4–6 persons. Educationally, 63.3% of the respondents had tertiary level of education, which could significantly contribute to their willingness to establish private forest plantation, because they are more likely to understand its importance especially to their lives and environment in general. The reason is that education makes individuals become functional members of the society (Ocho 2005).

### Respondents' knowledge of ownership and establishment of private forest plantations

The results displayed in Table 2 show that majority (76.9%) of the respondents had high knowledge of private ownership of forest plantations. Knowledge is a primary resource in establishment and management of any activities (Schultze and Leidner 2002). This stems partly from their awareness that individuals or private organisations can establish forest plantations, which they could even carry out in their backyard, on family or personal land, and that private forest plantation owners can sell planks or logs. It follows that respondents also had a general knowledge of the practice of agroforestry (Dezoyza et al. 2002). Regarding the establishment of forest plantations, the majority of the respondents (87.8%) displayed a knowledge of testing for seed viability before planting in the nursery and 89.9% were aware that prenursery germination of seedling is important, in order to ensure the viability of the seeds. Similarly, 80.6% agreed that soil testing is very important in establishment of forest plantations. Majority of the respondents (84.2%) had knowledge of the trees species to be planted, whereas 82.7% could differentiate between indigenous and exotic trees. Overall, most of the respondents (62.6%) had a high level of knowledge regarding forest plantation establishment.

### Perceived benefits of private forest plantation establishment

Table 3 reveals that more than half (57.6%) of respondents perceived the benefits derived from the establishment of private forest plantations to be “high”. The majority of

**Table 2.** Distribution of respondents by knowledge of ownership and establishment of private of forest plantation.

Knowledge level (ownership)	Frequency	%	Mean
Low (0–3)	32	23.1	3.9 ± 1.4
High (4–5)	107	76.9	
Knowledge level (establishment)			
Low (0–11.3)	52	37.4	11.4 ± 2.4
High (11.4–14)	87	62.6	

Source: Field survey 2017

**Table 3.** Distribution of respondents by perceived benefits of forest plantation establishment.

Benefit level	Frequency	%	Mean
Low (10–43)	59	42.4	43.9 ± 4.8
High (44–50)	80	57.6	

Source: Field survey 2017

respondents (96.4%) stated that the establishment of forest plantations could be of economic value, by serving as an income generating or diversifying activity that could help alleviate rural poverty. They also appreciated the importance of forest plantations in conserving the environment, because trees can reduce the effect of climate change, by serving as wind breaks (96.4%), controlling erosion (94.3%), as well as for demarcation and landscaping (95.7%). Dezoysa et al. (2002) observed that the drive to protect the environment was a key factor influencing people's participation in a private forest plantation program.

### **Attitude towards establishment of private forest plantation**

The results in Table 4 show that 54.7% of the respondents had favourable attitude towards establishment of private forest plantations, which could be linked to the benefits derived from the establishment of private forest plantations. Generally, when people appreciate inherent advantages in a particular activity, they are more likely to engage themselves in such activity even at the expense of other things. The respondents agreed that establishment of forest plantation is beneficial to the environment, and that the high rates of return of establishment of private forest plantations have economic benefits. Labour intensiveness (88.5%), a long growth period before harvesting (93.5%) and high capital investments (48.9%) involved in forest plantation establishment might discourage persons from engaging in the establishment of private forest plantations, as displayed by a fairly high percentage (45.3%) of respondents who reacted with disapproval.

### **Constraints to establishment of private forest plantation**

The various constraints perceived by respondents to the establishment of private forest plantations are shown in Table 5, with high cost of input and inadequate credit facilities ( $\bar{x} = 1.73$ ) ranking as the more paramount constraints to establishment of private forest plantations in the study area. The reason is that most of the modern equipment or implements required for such establishment are expensive, allied with frequent fluctuations of prices in the economy and in exchange rates. The establishment of private forest plantations, which is a long-term investment, was ranked second ( $\bar{x} = 1.70$ ). This becomes a problem, because most financial institutions in Nigeria, from which aspiring

**Table 4.** Distribution of respondents by attitude to private ownership of forest plantation.

Attitude level	Frequency	%	Mean	Minimum	Maximum
Unfavourable (16–39)	63	45.3	39.8 ± 9.0	16.0	54.0
Favourable (40–54)	76	54.7			

Source: Field survey 2017



**Table 5.** Distribution of respondents by constraints to establishment of private forest plantation.

Constraints	Mean	Rank
High cost of input	1.73	1
Inadequate credit facilities	1.73	1
Long-term investment	1.70	2
Inability to improve on indigenous species	1.63	3
Land tenure system	1.62	4
Inadequate knowledge on forest plantation establishment	1.59	5
Lack of technical knowledge	1.55	6
Low level of awareness	1.54	7
Government policy	1.38	8
Inadequate forest extension personnel	1.35	9
Poor market structure for timber product	1.31	10
Unfavourable climatic condition	1.28	11
High cost of maintenance	1.19	12

Source: Field survey 2017

private forest plantations investors would seek to obtain credit believe in short-term, highly predictable and profitable investments. This corroborates (ITTO (2009), which noted that financing of industrial forest plantation is constrained by several factors, among which is the long period between initial capital outlay and harvesting. (Dezoysa et al. (2002) also pointed out that investment in forest plantations is seen as investments for the future. The long growth periods of most of indigenous tree species require domestication by the Forestry Research Institute of Nigeria (FRIN), in order to prevent their extinction. It was observed that the Lands Use Decree of 1978 vested the ownership of land in the state. The absence of well-defined property rights has been the key obstacles to attracting investment in the establishment of private forest plantations, which explains why the land tenure system was identified as a constraint.

### **Willingness to establish private forest plantation**

Table 6 indicates that more than half (51.1%) of the respondents had a low willingness to establish private forest plantation. This result means that most of the respondents were not favourably disposed to establishing private forest plantations. This could be because of the constraints perceived to be associated with the private forest establishment, such as the high cost of inputs, inadequate credit facilities and the nature of long-term investment, among others, inherent in forest plantations establishment. Generally, when people perceive the advantages of a business activity as not being commensurate with the effort they are required to expend on such a business activity, they will not be willing to invest in it. Lack of free or low interest rate credit facilities coupled with slow rate of returns on the investment could further aggravate respondents' negative perception of the establishment of private forest plantations.

### **Relationship between respondents' personal characteristics and willingness to establish private forest plantation**

Table 7 indicates that there were significant relationships between respondents age ( $\chi^2 = 236.256, p = 0.000$ ), education ( $\chi^2 = 35.283, p = 0.019$ ), primary occupation ( $\chi^2 = 62.994,$



**Table 6.** Distribution of respondents by willingness to establish private forest plantation.

Attitude level	Frequency	%	Mean
Low (16–28)	71	51.1	28.2 ± 3.4
High (29–32)	68	48.9	

Source: Field survey 2017

**Table 7.** Chi-square tests between respondents' personal characteristics and willingness to establish private forest plantation.

Variables	df	$\chi^2$	$p$
Age	136	236.256*	<0.001
Sex	4	3.385	0.496
Marital status	3	7.730	0.052
Religion	8	8.306	0.404
Household size	36	31.873	0.665
Level of education	20	35.283*	0.019
Primary occupation	3	62.994*	0.004

Source: Field survey 2017,  $p \leq 0.05$ 

$p = 0.004$ ) and their willingness to establish private forest plantations. This implies that the age of the respondents determines their willingness to establish private forest plantations, because older respondents might see the establishment of private forest plantations as an investment, whereas a younger person might possess the requisite energy and enthusiasm that could make them willing to establish a forest plantation. Similarly, the level of education might affect the respondents' ability to correctly determine whether their involvement in an activity would enhance their well-being, as also observed by Pundo and Fraser (2006) hence their willingness to engage in it.

### **Relationship between respondents' knowledge, perceived benefits, attitude, constraints and willingness to establish private forest plantation**

The result in Table 8 shows significant relationship between knowledge and willingness to establish private forest plantations ( $r = 0.424$ ,  $p < 0.001$ ). The implication of this result is that the respondents' level of knowledge on private ownership of forest plantation has a significance influence on their willingness to establish it. This can further be explained by the fact that the recognition of the benefits and possible constraints associated with the establishment of forest plantation can determine whether an individual would be willing to establish private forest plantation or not.

Likewise, there was a significant relationship between perceived benefits and willingness to establish forest plantation ( $r = 0.180$ ,  $p = 0.034$ ). The benefits, either economic or environmental, can serve as incentives to an individual's willingness to establish private forest plantation, as also noted by Chang and Lin (2015). For instance, Dezoysa et al. (2002) observed that the drive for environmental protection is a main factor influencing people's participation in private forest plantation.

Similarly, a significant relationship was observed between attitude and willingness to establish private forest plantation ( $r = -0.230$ ,  $p = 0.006$ ). This explanation is that someone who is positively disposed to private forest plantation is more likely to be willing to establish one.

**Table 8.** Correlation between respondents' knowledge, benefits derived, attitude, constraints and willingness to establish private forest plantation.

Variable	<i>r</i>	<i>p</i>
Knowledge	0.424*	<0.001
Benefits	0.180*	0.034
Attitude	-0.230*	0.006
Constraints	-0.181*	0.033

Source: Field survey 2017,  $p \leq 0.05$

From the results it may be deduced that there was a significant relationship between the perceived constraints and willingness of the respondents to establish private forest plantation ( $r = -0.181$ ,  $p = 0.033$ ). The perceived constraints respondents face can influence their willingness to establish private forest plantation. The more severe the constraints, the less willing they will be and vice versa. Therefore, any business mindful person would weigh the advantages and disadvantages before venturing in to such business and if it is discovered that disadvantages outweigh the advantages, such business idea like establishment of private forest plantation will be dropped.

### **Determinants of willingness to establish private forest plantation**

Logit regression model was used to estimate factors determining willingness to establish private forest plantation. The logistic regression model is in the form of the ratio of natural logarithm of the probability of having a high level of willingness to the probability of a low level of willingness to establish private forest plantation; it can therefore be given as:

$$\ln\left[\frac{\pi}{1-\pi}\right] = \beta X + \varepsilon$$

where  $\pi$  is the conditional probability of respondents' willingness to establish private forest plantations.  $X$  is a vector of hypothesised explanatory variables, which include age, sex, knowledge, perception, perceived benefits and perceived constraints.  $\beta$  is the vector of unknown parameters to be estimated and  $\varepsilon$  is independently and normally distributed random error term.

Table 9 presents a description of model. The log likelihood function of the logit model was significant ( $p \leq 0.000$ ) showing strong explanatory power of the model. As evident in Table 10, the results from the regression showed that, as expected, most of the explanatory variables affected the willingness to establish private forest plantations.

The age of household head ( $\beta = -0.134$ ) was significantly ( $p < 0.05$ ) related with willingness to establish private forest plantations. This indicates that young household heads were more willing to establish private forest plantation than old household heads.

Table 10 illustrates the determinants of willingness to establish private forest plantations. The knowledge of private forest plantations ( $\beta = 0.115$ ) of respondents was found to be significant ( $p < 0.10$ ) and positively influenced the willingness to establish private forest plantations. This suggests that a unit increase in knowledge of ownership and establishment of forest plantations would result in increase in willingness to establish private forest plantations by 11.5%. The coefficient of attitude towards establishment of private forest plantations ( $\beta = 0.283$ ) was significantly ( $p < 0.05$ ) correlated with the willingness

**Table 9.** Description of model.

Variable	Description	Measurement
$\Pi$	Willingness to establish private forest plantation	Dummy: high = 1, low = 0
$X_1$	Age of respondents	In years
$X_2$	Sex	Dummy: male = 1, female = 0
$X_3$	Years of formal education	Actual years
$X_5$	Knowledge of ownership and establishment of private of forest plantation	Dummy: high = 1, low = 0
$X_{13}$	Perception	Dummy: favourable = 1, otherwise = 0
$X_{14}$	Perceived benefits	Dummy: high = 1, low = 0

**Table 10.** Determinants of willingness to establish private forest plantation.

Model	$\beta$	Standard Error	$p$
Age	-0.134	-0.033	0.049*
Sex	0.082	-0.014	0.113
Years of formal education	0.156	0.183	0.239
Knowledge of ownership and establishment of private of forest plantation	0.115	0.112	0.014*
Attitudes	0.283	0.028	0.001**
Benefits	0.371	0.058	0.001**
Constraints	0.105	-0.022	0.035*

LR Chi-square = 9.81, Prob. >Chi-square = 0.000,  $r^2 = 0.279$ , Log likelihood = -63.310

to establish private forest plantations, which suggest that a unit increase in attitude towards establishment of private forest plantation would result in increase in willingness to establish private forest plantations by 28.3%.

Perceived benefit of private forest plantations establishment was found to be highly significant ( $p < 0.05$ ) and positively related with willingness to establish private forest plantations. This indicates that a unit increase in the benefits of private forest plantation establishment would result in increased willingness to establish private forest plantation by 37.1%. However, constraints to establishment of forest plantations were negative and significant with willingness to establish private forest plantations. This implies that an increase in constraints to establishment of private forest plantations would reduce respondents' willingness to establish private forest plantations

## Conclusion and recommendations

Regarding the establishment of private forest plantations, respondents' knowledge was high, and their attitudes were favourable. They understood the economic and environmental benefits inherent in private forest plantation. However, their willingness to establishment of private forest plantation was affected by the constraints that they perceived to be associated with the establishment. Accordingly, the study indicates the necessity for concerned authorities, especially the state, to encourage the establishment of private forest plantation, by providing means that can help to circumvent the associated constraints. This could include provision of subsidised or free inputs, recruitment of more extension agents for sensitisation and dissemination of knowledge and skill on forest plantation establishment, provision/supply of short gestation varieties from the Forest Research Institute of Nigeria (FRIN) and the establishment of special trust fund.

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## Conflicts of interest

No conflict of interest. The article is neither submitted nor under consideration for publication by any journal.

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## Appendix

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Local government area .....

Community name ..... Respondent number .....

### Section A: Socio-economic characteristics of the respondents

1. Age (actual age in years): .....
2. Sex: Male ( ) Female ( )
3. Marital status: Single ( ) Married ( ) Divorced/Separated ( ) Widowed ( )
4. Religion: Christianity ( ) Islam ( ) Traditional ( ) Others ( )
5. Household size: ..... persons
6. Educational qualification(s): No formal education ( ), Primary school ( ), Secondary school ( ), Tertiary education ( ) others (specify) .....
7. Primary Occupation: Farming ( ) Lumbering ( ) Hunting ( ) Fishing ( ) Artisan ( ) Teaching ( ) Civil Servant ( ) others (specify) .....
8. Years of formal education acquired: .....

### Section B: Knowledge of private ownership of forest plantation among respondents

For each statement, please tick the most suitable response that describes how true it applies to you.

Items	Yes	No
Have you heard about private forest plantations?		
Do you know that individual or private organisation can establish forest plantations		
Do you aware that, backyard land can be used for private forest plantations		
Do you know that family or personal land can also be used for private forest plantations		
Do you aware that private forest plantations farmers can sell in planks and or in logs		

### Section C: Knowledge on forest plantation establishment among respondents

For each item, please tick the most suitable that describes how true a particular statement applies to you.

Items	Yes	No
Do you know anything about forest plantation?		
Testing for seed viability is important before planting in the nursery		
Seed dormancy needs to be removed or treated before planting.		
Prenursery germination of seedlings is important to ensure viability of the seeds		
Soil test is very important in establishment of FP in order to know the nutrients in the soil.		
Type of tree species to be planted will determine the space to be recommended		
Fertilizer application is essential for seedlings when they have fully established on the field		
Regular weeding will not expose tree seedlings to pests and diseases		
Pruning is necessary to cut off excess branches from the growing trees		
There are indigenous or exotic trees		
Do you know that trees are planted for different purposes e.g. pulp and paper, planks, poles, etc.		
Regular watering of seedlings is important in the nursery before transplanting to the permanent field		
Planting material can only be sourced from a silviculture specialist		
Do you know that seeds and seedlings can be collected from the natural forest		

**Section D: Attitude of respondents towards establishment of private forest plantation**

For each item, please tick the most suitable response that describes how true a particular statement applies to you

Items	Strongly Agree (SA)	Agree (A)	Undecided (U)	Disagree (D)	Strongly Disagree (SD)
White collar jobs offer quick income and as a result I would prefer it to establishment of PFPs					
One might not want to involve in the establishment of PFPs, because it is labour intensive					
The gestation period before harvesting is too long and this can make someone not to take it as primary occupation					
The belief that foresters are the only experts that can establish forest plantation might discourage someone to involve in establishment of PFPs					
Establishment of forest plantation is of no benefit to the environment					
It is very difficult to establish FP, because it involves some hard works, therefore it is suited to male than female					
Investment on establishment of FP is not what can bring return on time					
Establishment of PFPs is not what individual can regard or use as diversification of livelihood					
Establishment of PFPs is capital intensive, therefore it is not encouraging to involve in it					
One might not want to involve in the establishment of PFPs, because it requires technical knowledge					
Based on economic situation and its rate of return establishment of PFPs has no economic benefit					

**Section E: Perceived benefits of private forest plantation**

For each item, please tick the most suitable that describes how true a particular statement applies to you

Items	Strongly agree (SA)	Agree (A)	Undecided (U)	Disagree (D)	Strongly disagree (SD)
Involvement in PFPs is likely to serve as income generating activity					
Unavailability of jobs nowadays may encourage people to use PFPs as source of employment to individual					
Forest plantation can reduce the effect of climate change by serving as a wind break					
Establishment of FP can be used to control erosion					
Forest plantation can be used for land demarcation and landscaping					
Forest plantation can serve as a source of raw materials for wood products sector					
Establishment of PFPs serves as provision of facilities for recreation purposes					

(Continued)

Continued.

Items	Strongly agree (SA)	Agree (A)	Undecided (U)	Disagree (D)	Strongly disagree (SD)
Arable crops can be planted with trees known as agroforestry practices					
Forest plantation enhance better habitation for microorganisms and wildlife animals					
Forest plantation can make environment natural and good for exchanging of gases					

### Section F: Perceived constraints to private forest plantations establishment among respondents

For each item, please tick the most suitable that describes how true a particular statement applies to you

Items	Major constraint	Minor constraint	Not a constraint
Unfavourable climatic condition			
High cost of input			
Inability to improve on indigenous species			
Poor market structure for timber product			
Inadequate forest extension personnel			
Government policy			
Land tenure system			
Inadequate credit facilities			
Lack of technical knowledge			
Low level of awareness			
Long-term investment			
Inadequate knowledge on forest plantation establishment			
High cost of maintenance			

### Section G: Willingness to establish private forest plantation

For each item, please tick the most suitable that describes how true a particular statement applies to you

Items	Agree	undecided	Disagree
I like FP so much to the extent that I may engage in PFPs			
As a means of livelihood diversification I will like to adopt establishment of PFPs			
My interest in PFPs will make me to take it as primary occupation			
I will like to practice Agroforestry where arable crops will be planted within the trees			
If I should be in position to advice, I will encourage my colleague to establish PFPs			
As somebody who belief in PFPs so much I will like to take job opportunity in PFPs			
Availability of credit facilities will encourage me more to establish PFPs			
Having access to land will be a great incentive to establish PFPs			
Getting assurance that only minimal risk is involved, I will invest on PFPs			
Being already engaged in a job will not debar me from PFPs rather I will take it as secondary occupation			
Deforestation has been a major environmental degradation, therefore establishment of PFPs may contribute to the environmental beautification			
Establishment of PFPs could be useful to protect the environment and serves as a way to mitigate climate change			
Land boundary dispute could be resolved by establishing FP for land demarcation			
Unavailability of credit facilities may not encourage someone to establish PFPs			
Establishment of PFPs to enhance sustainability of forest reserve may be more appropriate to mitigate the menace			
Establishment of PFPs for the production of timbers may serve as source materials for wood product sector			



**Species of trees wish to plant, if willing to establish PFPs**

Species of tree	YES	NO
Teak ( <i>Tectoniagrandis</i> )		
Gmelina ( <i>Gmelinaarborea</i> )		
Mansonia ( <i>Mansoniaaltissima</i> )		
Iroko ( <i>Triplochitonscleroxylon</i> )		
Others specify		

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