

The Contribution of Land Certification to Land Management Practices- The Case Study of Dandi District, West Shewa Zone, Oromia National Regional State

Mekonnen Abebe

Abstract

This study investigated farmers' perceived land tenure security after they received land holding certificate, identified the contribution of rural land certification to land management practices, and the major challenges related to land management practices in Dandi District –West Shewa Zone of Oromia National Regional State. Primary data for the study were collected through household questionnaire, focus group discussions and key informants interviews. Data were subjected to descriptive and inferential statistics such as tables, percentages, and chi-square and t-test analyses. The result showed that farmers' perceived land tenure security was improved in post land certification and the majority of the households felt more secured in their land holding as a result of land certification. Land management practice undertaken by farmers has been increased after they received land certification. The study also identified that both governmental and non-governmental organizations played vital roles in promoting land management practices and in supporting farmers to practice different types of land management activities. Lack of clear demarcation, presence of some sort of tenure insecurity, planting specific tree species and the decline of other indigenous trees and financial constraint were some of the challenges that the study identified in relation to land tenure security and land management practices. For the implementation of the envisaged land management measures and further enhancement of farmers' efforts towards sustainable land management, credit facilities should be made available to farmers and stakeholders and concerned institutions should integrate their efforts towards diversifying the types of tree species planted by the farmers and emphasis should be given to promote and avail seeds and seedlings of indigenous trees and the construction of soil bund terrace for better and sustainable land management outcome. Furthermore, parcels of households need to be clearly demarcated and sketched with the help of cadastral mapping system, and farmers should be provided with a sketched map of their parcels with their holding certificate as a legal document.

Keywords: Land certification, land management practice, land investment, land tenure, and land rights security.

1. Introduction

Land as one of the natural resources base plays a substantial role in the national economy of a country. Particularly in Africa where the majority of the populations derive their livelihood from agriculture, land resource is the major source of household employment and income. However, increases in human and livestock population, dependence on traditional and unsustainable land management practices, and climate change induced problems, have become a threat to the sustainability of agriculture in Sub-Saharan Africa. Increasing population density and the increasing degradation of the natural resource base have become the leading causes to

declining per capita food production. Unlike earlier periods of less intense population pressure, it has now become more difficult to support the growing population through traditional land use and land management practices, with little or no technical inputs (Omiti *et al.*, 2000).

Ethiopia is among the Sub-Saharan African countries affected by land degradation (Betru *et al.*, 2005), that is adversely affecting the performance of agricultural sector (Woldeamlak, 2003). Land degradation remains a major challenge and the issue of land management is a major environmental concern in Ethiopia where more than 80% of the population is rural and dependent on agriculture. Thus improvements in land productivity become vital to enhance and sustain the welfare of this largely agrarian population (World Bank, 1989). Improvements in agricultural productivity require a more efficient and sustainable use of rural resources and it calls for the adoption of improved land management practices.

Research findings in the area of land management show that the adoption of land management practices are influenced by a host of factors. According to Desta (2012), land management decisions are influenced by different factors such as level of infrastructure development, quality of agricultural extension services, provision of conservation technical assistance, and type of land tenure policy. Kabubo-Mariara (2007) identified property rights as one of the key institutions that determine the adoption of different land management practices. Moreover, providing land certificate is believed to affect the application of technologies for the management of agricultural and natural resources, and particularly the adoption of land management practices. Lack of tenure security, among other factors was identified as contributing to the aggravation of land degradation as it discourages farmers from investing on their land and from taking adequate care to prevent soil erosion (Berhane & Fayera, 2005).

Though there are people who argue that land titling has nothing to do in enhancing land investments, international institutions such as the United Nations for Human Settlement (UNCHS, 1999) and some researchers (Deininger, 2003; Gebremedhin *et al.*, 2003), revealed that there is close relationship between land tenure and property rights and that secured property rights to encourage farmers to invest in land management practices.

Examples from several countries adequately support that land ownership rights and investment in land improvements are related. In Thailand, land ownership security was found to significantly explain incidences of land improvements (Feder & Onchan, 1987) while in India improvements in land markets were found to be associated to increase in conservation investments on farm land (Pender & Kerr, 1998). There was a similar experience from Tigray, northern Ethiopia, where land tenure security was significantly and positively associated with long-term durable soil conservation investments such as stone terraces (Gebremedhin & Swinton, 2003).

The current Ethiopian government has been taking measures to implement land titling aimed at improving farmers' perceived land tenure security. Though the titling process provides certificates of holding and do not bestow ownership rights, this is

considered as an incentive that will encourage farmers to sustainably manage the land they own. Nevertheless, the long-term impact of the measures taken by the government to improve agricultural production through land titling including the current land policy of the country in relation to tenure security needs to be periodically assessed. This study therefore was initiated to explore the contribution of rural land certification in improving farmers' incentives to invest in land resource management practices.

2. Statements of the Problem

Some research findings reveal the existence of robust relationship between land tenure security and investment on land (Abate *et al.*, 2012; Todaro and Smith, 2003). While secured land right is believed to contribute a lot in improving land management and natural resources as it encourages farmers to invest in land. Some researchers however argue that the possible effect of land certification to motivate farmers in improving investment in land is debatable. Place (2009), indicated that there were cases where land certification did not produce any positive effects in land investment. Furthermore, land certification showed no significant effect in Somalia, Kenya and Uganda on investment or land productivity. Likewise, the study conducted in Ghana and Rwanda shows that "an increase individualized land rights (private ownership) does not appear to have had any effect on soil conservation practices or land investment (Platteau, 1996).

On the other hand, some researchers have identified land certification as having some level of association with improvements in land management, in the use of land in a sustainable manner or in investments in resource conservation (Ogolla & Mugabe, 1996; Besley *et al.*, 1997; Deininger, 2003; Shimeles *et al.*, 2009).

In Ethiopia, a land reform was introduced in 1975 during the Derg regime in which land was transferred to 'land to the tenant'. Land tenure system during this period was characterized by insecure land rights and land fragmentation from several land redistributions in about 17 years of its rule. As a result, the practice of planting trees and other soil management practices such as application of organic manure, fallowing and soil conservation activities became rare for the farmers could not be sure that they will get compensation for investments on their land and aggravated land degradation (Assefa, 2010).

After almost two decades of socialist oriented economic policy under the military regime, a new constitution was introduced by the incumbent government, and constitutionally land belongs to the state (Birhanu *et al.*, 2003). But, measures were taken to implement land titling aimed at improving farmers' land tenure security since 2003 in the country's main regions. The titling process provides certificates of holding but do not bestow ownership. Nevertheless, whether land titling and other policies implemented to improve agricultural productivity by the Ethiopian government, are conducive to investments in land, and whether these incentives were translated into improvements in the sustainable use of the natural resource base in the country is an important question that needs to be addressed. Regional differences in natural resource endowments in Ethiopia may have impact on the level of

farmers' responses to acquisition of land rights and their willingness to invest on land management. In Oromia regional state, farmers have been granted land holding certificates since 2003. Nevertheless, changes in land management and investments resulting from the granting of land holding certificates is the least documented and least studied issue in the region.

Therefore, in light of the above arguments, this study tried to investigate the contribution of land certification to land management practices with specific reference to west Shewa Zone of Dandi District, Oromia National regional state.

3. Objectives of the Study

The major objective of study is to explore the contribution of rural land certification in improving farmers' incentives to invest in land resource management practices.

More specifically, the objectives of the study are to:

- Assess farmers' perception of land rights security before and after provision of land holding certificate
- Identify major challenges that influence farmers' motivation to undertake land management practices
- Examine the role of government and other institutions in promoting land management practices in the study area.

4. Methodology

4.1 Description of the study area

Dandi district is one of the eight districts in west Shewa zone of Oromia regional state located about 80 kilometer away from Addis Ababa west side. The capital of the district is known as Ginchi. The information obtained from the district Environmental Protection Land Administration and Use Office (EPLAUO) reveals that Dandi District is structured in to 48 rural kebeles with the total household population of 172,842 of which male constitute 21,171 and the rest 4,344 are female. The average family size for the district is 4-5 persons per house hold. The District has a total area of 174,617 hectare out of which arable land is 72,664 hectare, grazing land 1,980, hectare, forest land 9,6685, unused land 1242 hectare and others 2046 hectare. The altitude of the area ranges between 1200-3288 above sea levels and the average temperature is 16.55 degree centigrade with an annual average precipitation of 700-2300 mm per year. The major livelihood of the area is mixed farming which includes both cultivation of various crops and animal husbandry. However crop cultivation is the major source of income for most farmers. The major crops grown in the area are cereals, pulses and root crops. Enset is also commonly grown as homestead for subsidiary source of food. Grazing land is communally owned by neighboring individuals and relatives who are governed by the local institution.

4.2 Research Design

The research design is survey method/ cross-sectional where a snapshot of a population was produced at a particular point in time. A descriptive research involving both

quantitative and qualitative techniques was used. The two types of data gathering tools or techniques were linked due to the reason that both can corroborate each other through triangulation so that the relevant information for study under investigation would be obtained.

4.3 Sampling Method

Purposive sampling technique was used to select one District and the desired number of Kebeles. Accordingly, Dandi District was selected from West Shewa zone of Oromia regional state. Out of a total of 48 kebeles in the District, five of them were purposely selected based on the criteria that the selected Kebeles should be where the provision of land holding certification has been implemented. Out of the total household population of the five selected kebeles, which was 2356, only 150 sample households were used as a source of data in which the required random sample size has been determined based on the formula set out by Grosh and Munoz (1996) by calculating the sampling error and ensure the appropriate representativeness of the sample to be used.

The formula used was: $e = (\sqrt{1-n/N})()$ where
E =error, n =Sample size (150), N=population (2356) and P=0.5(50%)

The 150 sample households were divided for five kebeles proportionally based on their respective household size. Accordingly, in order to select the desired subjects from a population of each kebele, simple random sampling technique were used which involves selecting the desired subjects from a list of the population (sampling frame). The kebeles selected for data collection were Boda Bosoqa, Honche Bite, Mareno Gonjeb, Dandi Sulu and Dandi Mumicha.

A total of 2354 households are residing in these kebeles out of which 1944 (82.58%) are male headed and 410 (17.42%) are female headed and all of them were registered and received certificate of holding. Currently, a total of 28,261 households out of which 22,145 (78.36%) male headed and 6,116(21.64%) female headed households have been registered and got primary book of holding certificate in the district as a whole.

Quantitative data on the level of land improvement activities, feeling of land right security, problems related to land certification such as absence of clear demarcation, registration of farmers' land holding and provision of certificate of holding and other basic information related to the study were collected from household survey. The required training was given to 3 enumerators and one supervisor collecting the data so as to enable them to gather the necessary information as desired.

Table 1. The distribution of Sample Size by Kebeles

No	Kebeles	Total Population	Sample size
1	BodaBosoqa	585	37
2	Honche Bite	387	25
3	MarenoGonjeb	446	29
4	Dandi Sulu	460	29
5	DandiMumicha	476	30

4.4 Data Collection

4.4.1 Formal Survey: Structured Questionnaire

Regarding the household survey, structured questionnaires, with both open and closed ended questions were designed. These solicited information on land management practices employed by farmers before and after land certification, farmers' perception of land tenure security before and after land certification and other related issues. The questionnaires were pilot -tested to check some problems like ambiguities and redundancies and adjustments were made where necessary. In view of this, 3 farmers from each kebeles were selected to respond to the pilot test and 15 farmers from 5 kebeles were taken randomly. Out of the total rural kebeles, 5 of them were used for administering the questionnaire by randomly drawing the number of households for each kebeles from a list of registers that was obtained from each kebele administration offices.

4.4.2 Informal Survey: Key informant interview

The other type of data collection technique used for this study was an interview. A smaller sample population than the questionnaire was interviewed by the researcher and assigned informant and audio recorded. The required number of interview questions which are very much related to the questionnaire items were prepared and administered based on the convenience of the interviewee. The interview questions were ready-made, i.e., semi-structured type of question. For the reason of manageability, 30 farmers, 6 from each kebeles were randomly selected for the interview for the purpose of triangulation and were briefly informed of the purpose of the interview ahead of time. Key-informants were also drawn from all development agents (DAs) working in the sample kebeles, and District Land Administration offices. Accordingly, discussion with administrative bodies of 5 kebeles (2 from each kebele) was held. The questions were designed in English and translated in to the local language of the region i.e., "Affan Oromo"

4.4.3 Focus Group Discussion

Focus groups from different backgrounds were established. Accordingly, discussion with concerned officials of Environmental protection land administration and use Authority at district level was held. Check-lists were prepared and these were focused on contribution of land certification, improvements made on land management practices as a result of land holding right, Farmers' perception of land right security before and after land certification and other related issues. These facilitated

in obtaining detailed qualitative information and also triangulating data from household survey.

4.5 Methods of Data Analysis

In analyzing quantitative data, descriptive statistical methods, frequency table, percentage, graphs and inferential statistics - chi-square tests of association and paired t-test were applied. Descriptive statistics were used in analyzing the nature of land management practices before land certification and changes of land management practices employed by farmers after the provision of land holding certificate, households' perception of land right security before and after land certification and the role of institutions in supporting farmers' efforts and challenges that farmers face in implementing various conservation practices. The qualitative data obtained from the focus group discussions and from key informants interviews were analyzed thematically. Chi-square (χ^2) test of association was also used to test if there is association between land certification and farmers' investments in land management practices. Moreover, an independent t-test was also employed to compare means of numbers of trees planted by farmers before and after land certification.

5. Results and Discussion

5.1 Socio-demographic and Economic Characteristics of Respondents

The study population is predominantly composed of male-headed households. Out of the total samples, 84% of them were male-headed farmers. Access to land is predominantly biased to male-headed households in the area showing the gender imbalance in the area about three-fourth of the sample landholding farmers were economically active sections of the population. The ages of 78% of the farmers fall in the range of 18 – 60 years, whereas that of one-third (30.7%) of the respondents were adults. Nevertheless, only 5 % of them were young. The mean (51.2 years) and median (50.5 years) age of the respondents revealed that the landholders are generally older farmers. The age distribution of the respondents in the study was found to be normally distributed, and showed a positive skewness. The standard deviation for the age of the respondents was 13.1 years showing the existence of variability in ages among the respondents.

Table 2. Age Distribution of the Respondents

Age category	Frequency			Percent	
	Male	Female	Total	Male	Female
18 – 30	7	0	7	4.7	0.0
31 – 35	12	0	12	8.0	0.0
36 – 40	15	5	20	10.0	3.33
41 – 45	12	2	14	8.0	1.33
46 – 50	17	5	22	11.33	3.33
51 – 55	18	4	22	12	2.67
56 – 60	17	3	20	11.33	2.0
61 – 65	11	2	13	7.33	1.33
66 – 70	10	1	11	6.67	0.67
70+	8	1	9	5.33	0.67
Total			150	Total	100

Almost all of the farmers (98.7%) in the study area owned parcels which were registered and certified for primary book of owners. Very small proportion (1.3%) of the farmers was found to own parcels that were not registered. The record of the Environmental Protection, Land Administration and Use Office (EPLAUO) of the District shows that 98% of the households had parcels that were registered and the result from the household survey is a closest estimate of the official record. Some parcels were not registered and the households did not receive land ownership certificate because some of them were not willing due to lack of awareness and others had some border conflicts with their neighbors and their cases were being examined in the Court during the time of land registration. During an interview session held with the district EPLAUO experts, it has been observed that registration and provision of land certification was taking place for those who didn't receive before. However, the majority (95.3%) of the respondents mentioned that their parcel was not demarcated and sketched. The district land administration office experts mentioned that the parcels of farm land in the study area are not yet clearly demarcated and sketched due to budget constraints and is planned to be done in the coming year. Lack of clear demarcated of boundaries is a source of disputes over land and much of the Court's time is spent in looking at cases related to land-related disputes. Due to the over-arching number of cases, delays in concluding the cases are common. This is also supported by ECA (2004). Besides, absence of clear demarcation of boundaries could be a source of tenure insecurity. Related to this, Place (2009) contended that certainty of retaining rights from actual or risk of dispute over rights has created feeling of tenure insecurity. The size of the land specified on the primary book of land certificate is done based on measurements taken in traditional way and using the local unit of measurement called *Kert/Fechassa (Affan Oromo)* which is roughly a quarter of a hectare. In terms of actual measurement, however, four *Kert* may not be equivalent to one hectare. Similarly, the boundaries are demarcated using physical and natural structures such as rivers, hills, rocks, trees and roads as a reference point. This kind

of demarcation is not dependable as one can move stones, and feeder roads may be changed over the years. Such practices of demarcation may have negative effects on perceived land tenure security of peasants and may aggravate land related disputes. Hence the need for clear demarcation of boundaries, perhaps with the help of cadastral maps, is crucial. This is also stipulated in the Land Proclamation of the Oromia regional state (Proclamation No.130/2007, Art.15).

5.2 Farmers' Perception of Land Tenure Security

Variables such as occurrence of future land redistribution and fear of land expropriation by the government were considered as major factors influencing the perceptions of the farmers in terms of their feelings of tenure insecurity. Regarding farmers' perception of fear of land to be taken any time by the government, the majority of the respondents said that their fears have somehow decreased after they got the land certificate.

Table 3. Responses of farmers to issues related to perceived feelings of tenure security

Question	Response	Frequency	%
Have you had fears that your parcels could be re-taken by the government before land certification?	Yes	100	66.7
	No	50	33.3
Do you expect that there will be future land re-distribution after holding your land certificate?	No	138	92.0
	I am indifferent	12	8.0
Has your overall feeling of tenure security increased after land certification?	Yes	125	83.3
	No	11	7.3
	I am indifferent	14	9.4

Source: Own survey

Before land certification, the majority (67%) of the respondents had the fears that their lands could be taken anytime by the government. The remaining (33.3 %) said that they did not fear of land redistribution and secured before land certification. This could be due to the reason that land redistribution has been taken place only once in the study area and didn't cover the entire kebeles. As the focus group discussion and interview result showed, the redistribution was focused on farmers having a land more than the kebele average and the implementation was limited to few kebeles. After they received land certificates however, 92% of the respondents believed that their fears that their parcels could be expropriated by the government have decreased while the remaining proportion still not sure that their parcels could stay with them although they hold certificates. Similarly, the proportion of the respondents who believed that future land re-distribution is going to happen has decreased after land certification. The interview and focus group discussion (FGD) held with farmers also revealed similar facts. The level of confidence of the farmers that land re-distribution will not take place in the future has increased as a result of land certification. This has further improved their feelings of tenure security. Ac-

According to the majority of the respondents, though they know that the land is owned by the state and expropriation for investment could happen, they do believe that compensation could be given, and this has developed their confidence.

However, farmers response during interview and group discussion indicated that land certification highly developed farmers confidence on land tenure security even though it did not completely cleared out fear of land to be taken by the government at any time since their confidence is associated with compensation to be given in which this negatively affects farmers initiatives to practice land improvement activities. Though the majority of the respondents (92%) replied that they are confident enough for future land redistribution will not occur, for similar question asked whether their overall feeling of tenure security increased after land certification, out of the 92%, only 83.3 % of them replied that their overall feeling has increased after land certification in which 7.3% said “no” and 9.4% said “I am indifferent”. This might indicate that, though they said that they are secured of their land certificate, it seems they still have a feeling of insecurity inside that they didn’t want to express the reality as this issue is politically sensitive and can only be known through an ethnographic research. Security is believed to be maintained and further increased by the additional benefit obtained from the secured land and certificate of holding. When the farmers able to lease out their land and use their certificate of holding as collateral to access credit service, they realize that they are exercising their property right and this further strengthens their security and increases land conservation activities. However, as the finding of this research showed, the benefit obtained from leased land and credit access using the holding certificate as collateral was very limited though it is allowed in Oromia land law (Proclamation No.130/2007, Art.5 sub art. 6). Hence, one could infer that farmers could not realize the benefit brought about by land policy and exercising their right practically as this in turn affects farmers’ perception of tenure security and limits farmers’ investment decision.

5.3 The Contribution of Rural Land Certification to Land Management Practices

Security of tenure is a critical variable in determining the incentives to undertake various Land Management Practices (LMP). Hurni (2000) described the concept of LMP as the application of productivity enhancing farm practices such as terracing, fallowing, planting trees, organic manure, construction of soil and water conservation structures, fencing the farm land. It is argued that land certification increases individual or communities’ investment in land in the sense that secured land ownership considerably increases farmers’ incentives to supply labor to initiatives aiming at improving the fertility of individual or communal land (Deininger *et al.*, 2006). One of the key objectives of this research was to investigate whether or not land certification has contributed in encouraging farmers to improve their land management practices.

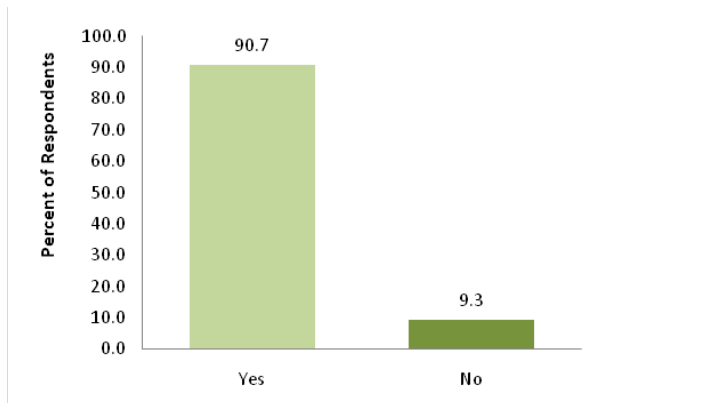


Figure 1. Proportion of farmers engaged in land management practices as a result of land certification.

The respondents were asked about whether they had engaged in improvements of land management activities of their parcels as a result of holding land certificates. The findings of the study indicated that 90.7% of the respondents were involved in undertaking various land improvement activities on their parcels after they received land certificates. The bar chart (Figure 1) shows that the proportion of farmers who are engaged in land management practices was high due to the legally secured land holding rights. Thus, one can deduce that provision of legally recognized certificate of land holdings might be considered as one of the motivating factors for the landholders in the study area to engage themselves in better land management activities than before. This concept has been emphasized by scholars that secured property right has a positive impact on agricultural productivity as it eliminates the anxiety and uncertainty of farmers for possible expropriation from their lands (Shimelles *et al.*, 2009; Abera *et al.*, 2012).

In the study area, the farmers had been engaged in the improvements of their parcels, albeit there was variation in the types of land management practices, mentioned that they were engaged in tree planting, terracing on farmland, application of compost and organic manure, and fencing their farmlands. This indicates that land certification has played an important role in motivating them to invest on their farm lands. This finding is in harmony with Abera *et al.* (2012) who found out that among land management practices, terracing, planting trees application of compost, application of farm yard manure and construction of water harvesting structure have increased after land certification. Assefa (2010) also found out similar results in that the majority of the households who received land certificates were involved in one or more of land improvement activities. However, it was indicated that among other factors which may further influence land management decisions, land tenure policies, and conservation technical assistance programs are considered as the major ones (Pender *et al.* 2006).

In this study, the null hypothesis (H_0) was stated as there is no association between land management practices and land certification, while the alternative hypothesis (H_1) was that there is association between land management activities performed and land certification. As shown in Table 4.3, the null hypothesis was rejected for

all but the practice of planting any one type of tree species at $p < 0.05$. Thus, the researcher deduced that the association between land management efforts made before and after land certification is statically significant.

Table 4. Percentage of farmers engaged in LMP before and after land certification

Land Management Practice	Response	Before certification	After Certification	χ^2
Tree planting	Yes	74.5	92.7	1.01
	No	25.5	7.3	
Soil bund Construction	Yes	20.8	91.3	7.17**
	No	79.2	8.7	
Stone bund Construction	Yes	27.3	84.8	16.60**
	No	68.7	15.2	
Compost & organic manure	Yes	75.7	93.4	9.01**
	No	24.3	6.6	
Fencing the farmland	Yes	63.1	95.1	21.86**
	No	36.9	4.9	

**Significant at 5% probability. Degree of freedom for each chi-square (χ^2) tests of association is 1.

Construction of soil and stone bund, application of compost and organic manure and fencing farmlands are all significantly associated (at $p < 0.05$) with land certification. The proportion of the farmers who applied these types of LMP has increased after land certification. The significant increase of soil and stone bund construction observed was quite different from the terrace construction undertaken by mass mobilization in the form of campaign by the government. As the key informants and focus group discussion revealed, the campaign was focused on large open areas of both farm and pasture lands. The homestead farm areas were left for individual farmers as they are found in residential areas and these fragmented homestead farms were not convenient for mass mobilization. The significant increase of both soil and stone terrace construction mentioned was an effort made by individual framers on their respective homestead and uncovered farm areas by public works. The questions during data collection were made clear for farmers to respond from the perspective of their individual efforts. With respect to tree planting, the proportion of the farmers who planted any type of tree species did not show any association with land certification implying that farmers used to plant trees regardless of land certification to fulfill their demand of house construction, fuel and generating income for their livelihood diversification. As could be observed from table 4 above, 74.5% of the farmers in the study area managed to plant trees while there was fear of land redistribution before land certification. This could be due to the reason that farmers were planting fast growing trees like Eucalyptus and Grevillea Robusta to maximize their income before redistribution would happen as they were in secured of their holdings. The other reason could be farmers' plant trees to protect their farm land from

heavy erosion as the area is sloppy for the sake of survival. Further analysis was carried out to analyze if there is statistical difference in the different types of tree species preferred for plantation due to land certification and the result turned out to be significant for some tree species.

The findings of this study show that farmers' willingness and motivation to invest in land management practices has increased over time due to land certification. This finding is consistent with the findings of Ogolla & Mugabe (1996), Besley *et al.* (1997), Deininger (2003), Shimeles *et al.* (2009) and Assefa (2010) who found that certification encourages landholders to invest in land. Their results showed that land certification has some level of association with improvements in land management, in the use of land in a sustainable manner or in investments in resource conservation. However, the result of this study is inconsistent with the findings of Tesfu (2011) in Amhara region and Place (2009) in Somalia and Kenya who argued that tenure security has no any association with the decision of farmers to invest in land management practices.

5.4 Comparison of the Magnitude of Land Management Practices before and after Land Certification

Tree planting before and after land certification

A total of ten different types of tree species were recorded in the farmers' fields. The number of *Olea Africana* (Weyira), *Sesbania* and *Acacia* (Girar) planted by farmers after land certification have declined, while the farmers have increased plantation of the other seven different types of tree species. Nevertheless, the magnitudes of trees planted after land certification was significant only for *Eucalyptus* (Bahir zaf) and *Grevillia*. The mean increase in the number of *Eucalyptus* tree plantation after the farmers received land certificate was 150, and this was statistically significant at $p < 0.05$. Similarly, the farmers planted about three more *Grevillia* trees after land certification and this was again statistically significant at $p < 0.05$ (Table 5). All the other tree species, however, did not show any significant increase after land certification. Here it is important to note that plantation of important indigenous tree species that take many years of maturity are still not preferred for plantation by the farmers. One can argue here that the farmers preferred to plant fast growing tree species like *Eucalyptus* and *Grevillia Robusta*, and this may be associated to the degree of tenure security felt by farmers. When farmers anticipate expropriation from the land for public purposes, they go for fast growing tree species that can generate income in a few years.

Table 5. Mean difference in number of different tree species planted before and after land certification

Type of tree species	Mean No of trees planted		Mean Difference	Std. Error Mean	t-test
	Before certification	After certification			
<i>Eucalyptus globulus</i>	181.85	331.89	150.033	53.144	2.823**
<i>Juniperous procera</i>	28.33	36.87	8.540	6.186	1.381
<i>Dombeya torrida</i>	1.55	8.06	6.52	6.552	0.995
<i>Hagenia abyssinica</i>	1.48	4.45	2.973	2.003	1.484
<i>Grevillea robusta</i>	0.05	2.59	2.547	0.47	5.409**
<i>Olea Africana</i>	0.15	0.03	-0.120	0.1	-1.178
<i>Arundinaria alpine</i>	1.47	4.17	2.7	2.5	1.067
<i>Sesbania sesban</i>	0.09	0.00	-0.087	0.09	-1.067
<i>Acacia bussei</i>	0.46	0.15	-0.307	0.19	-1.591
Fodder trees	0.00	0.11	0.330	0.24	13.669

**p<0.05

5.5 Other types of land management practices before and after land certification

Similarly, the researcher further enquired the difference in the magnitude of other types of land management practices adopted by the farmers for two different time periods. As presented in Table 6 a paired t-test was computed in order to compare the mean scores of conservation structures undertaken before and after land certification. The result showed that, on average, a farmer constructed 0.45 hectare more stone bund terracing after land certification, and this was statistically significant at $p < 0.05$. Similarly, the farmers applied compost and organic manure, on average, on 0.25 hectares of additional land compared to the pre-land certification period. This was again statistically significant at $p < 0.05$. Fencing of farm land was also improved after land certification, and on average, the farmers fenced 0.19 hectares of more lands compared to the pre-land certification period. The significant increase in the magnitude of the three types of land management practices could be partly associated to the secured holding land certificates and to the legal protection of tenure security that motivated the farmers to undertake various land improvement activities. Soil bund terrace construction on the other hand has shown insignificant increase in terms of magnitude, indicating that due attention was not given though soil bund terracing seems to be easier and economical in terms of labor and time than stone bund terracing. When households were asked why they practiced more conserva-

tion practices after land certification, they responded that besides having legal land-holding document at hand, they received several relevant trainings regarding the benefits of adopting land management practices from EPLAUO of the District and became aware of the contribution of such practices in improving their agricultural productivity. The EPLAUO experts also indicated that farmers were given recurrent trainings and this brought about a change in land management undertakings in the study area. In general, though farmers' motivation and their current effort of undertaking various conservation practices seemed to be promising as a start and showed the positive effect of land certification long term investment, it is difficult to conclude that the overall performance of land management activities practiced was as adequate as desired both in terms of magnitude and proportion. In this regard, diversifying as well as increasing the quantity of tree planting and construction of other terracing structures is crucial in order for the land management undertaking to be robust enough.

Table 6. Mean difference in the magnitude of other types of land management practices (in ha) before and after land certification.

Type of Land Management Practice	Mean number of trees planted			Standard Error of mean	t-value
	Before certification	After Certification	Mean Difference		
Soil bund construction	0.010	0.111	0.11	0.01	8.605
Stone bund construction	0.00	0.045	0.45	0.008	5.245**
Compost & manure	0.09	0.34	0.25	0.02	12.085**
Fencing the farmland	0.14	0.33	0.19	0.02	9.26**

**p<0.05

5.6Challenges to undertake Land Management Practices

The study further identified the different challenges that the farmers are facing in the adoption of land management practices. About 43% of the respondents explained that they face different challenges to adopt and increase the magnitude of different types of land management practices. Those respondents who said to have faced constraints in adopting land management practices; shortage of finance was mentioned as the most serious challenge. This is related to cash income required to buy the necessary inputs and to pay wages for daily labourers. In the literature, poverty-environmental degradation nexus is well documented and the poor are identified as agents of land degradation because they are too poor to invest on land management practices.

In addition, financial problem mentioned by the great minority (43%) should not be overlooked as it has an implication on the performance of land management practices as financial issue goes hand in hand with land investment and determines

the quality and quantity of efforts to be made. In this regard, the role of local institutions is very crucial since they have both economic and social functions and believed to have a paramount significance in land management aspect in various ways. Varieties of local institutions, whose major function is natural resource management exist in Oromia that assist farmers in availing credits and services to enable members to acquire goods and services that are highly priced. Given the tough official bank lending regulations, institutions like *Iddir* and *Ekub* in the region can contribute to NRM (Mowo *et al.*, 2011). This might encourage the community at large and avoid their financial constraint to further enhance their land improvement efforts.

The contribution of institutions (both governmental and nongovernmental), was found to be high in assisting farmers to take part in land management effort. Similarly, security of land right also has shown significant increase and motivated farmers to get involved in a number land improvement activities. However, despite the necessary services rendered by such institutions and significant increase of security after land certification, planting trees as part of land management practice effort was found to show significant increase only for two tree species (Eucalyptus and Grevillia) whereas there was no significant improvement for other indigenous trees such as *Juniperous procera* (Tid), *Dombia* (Welkefa), *Hagenia* (Koso), fodder trees and construction of soil bund terracing.

Moreover, as could be observed from Table 5 above, planting of other trees such as *Olea* (weyra), *Bamboo* (kerkeha), *Sesbania* and *Accacia* (Girar) was declined alarmingly resulting in an imbalance of tree planting. This could be due to the reason that farmers gradually started to plant fast growing trees for immediate source of income. This tendency might be linked to lack of awareness and the existence of some sort of insecurity in fear of to be evicted from their land. Insufficient and lack of focused extension service targeted to promote varieties of trees in their respective agro-ecology and purpose of conservation might have brought about such disaster as it could have been possible to change farmers' attitude through continuous education accompanied by close monitoring and supervision schedules to diversify the required tree species.

In view of this, one can argue that the problems mentioned above contributed to the decline of important indigenous trees as well as soil terrace construction. Besides, as has been discussed earlier, the responses of the majority of the farmers and discussion held with the district land administration experts revealed that most of the farmers' plot was not clearly demarcated and sketched since it requires more budgets. However, it is planned to implement in the coming year at the district level. In view of this, it is possible to conclude that absence of clear demarcation of boundaries seem to be a source of disputes over land and creates feeling of tenure insecurity in which this in turn decreases farmers' motivation of long term investment decision and hence implementation of demarcation and sketching of farmers plot with cadastral mapping system is crucial as it is clearly indicated in the Oromia rural land proclamation (Proclamation No.130/2007, Art.15 sub article 2.)

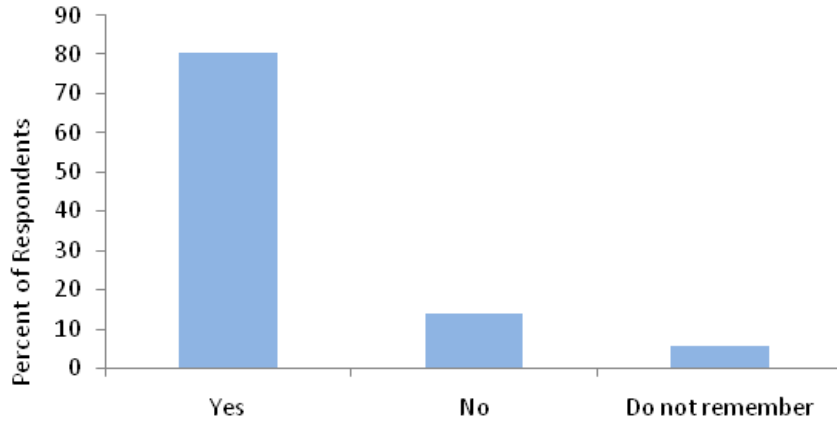


Figure 2. Land Redistribution before the Provision of Certificate of Land Holdings

The majority (80.7%) of the farmers in the study kebeles expressed their views on the occurrence of land redistribution before certificate provisions in the study area (Figure 2). If there were repeated land redistribution in the locality, then the farmers might not be willing to actively and courageously engage in different types of land management practice on their respective landholdings. Therefore, from the above-presented distribution of data, the majority of farmers agreed to the occurrence of land redistribution before land certification program took place. However, despite these findings, there was security of land holdings by many farmers. It was found out that the level of security and motivation to improve land management activities was found to be high.

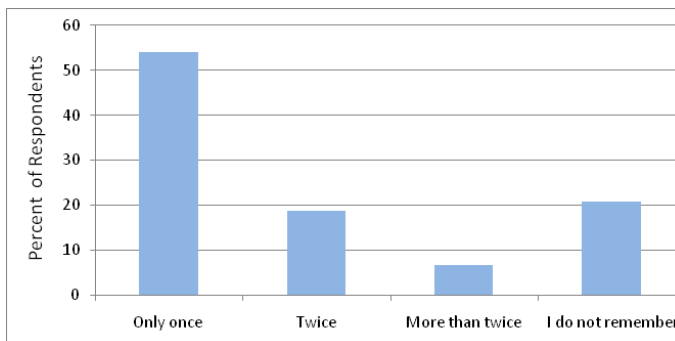


Figure 3. Farmers' opinion on the occurrence of land redistributions before certification

As shown in Figure 3, fifty-four percent (54%) of the farmers' parcel was taken and redistributed to others by the local government before the provision of land certificate only once. Besides, (18.67%) of the respondents agreed that land taking and redistributing to others took place twice before land certificate was provided to each farmer. So, land taking and redistribution have not been a new phenomenon by the farmers in the dynamism of land management practices. Thus, it may be possible to conclude from focus group discussions and key informant interviews that, the land redistribution undertaken did not have a holistic approach that covered the whole

kebeles and was not frequent as in the Northern part of Ethiopia. What they call redistribution according to the District environmental protection, land administration and use office (EPLAUO) was allocating unused lands to landless people and transferring lands to others when someone without family dies. According to the key informants' views, land was taken from some people who had more size of land above the Kebele average (2.5) hectares and redistributed to others and this was practiced only once before land certification. The finding of this research is in line with Assefa (2010) in which he found similar finding that the level of farmers' confidence has increased through time as a result of certification.

5.7 Institutional interventions to enhance land Management Practices

It is an undeniable fact that various governmental and non-governmental (both local and international) institutions provide various types of supports in an increment and boost of the land management efforts of farmers in different areas of Ethiopia. Besides, a positive evaluation is presumed to attract various institutions in the collaborative efforts of enhancing farmers' capability to manage and invest on their land holdings. In this section, the data and the relative findings concomitant to the institutional support, facility provisions and the level of interventional intensity they have brought based on the data.

Table 7. Institutional support and interventions in the contribution towards land management practices

No	Variable	Responses	Frequency	Percentage
1	The Institution which helps the respondent in providing all the necessary support to enhance land management practices	Government	17	11.3
		NGOs	8	5.3
		Both Gov't & NGOs	119	79.3
		No support from any	6	4.0
2	The kind of support obtained from the mentioned institution	Technical Advice	7	4.7
		Material support.	5	3.3
		Only tree seedlings	4	2.7
		All three types of support	127	84.7
		Others if mentioned	7	4.7
3	Evaluation of the respondents on the interventions of supporting institutions	Good enough	80	53.3
		No enough at all	48	32.0
		No response	22	14.7

The following graphs are the alternative presentations of the data for a semi-otic variety provision of convenience to the readers and the data readability.

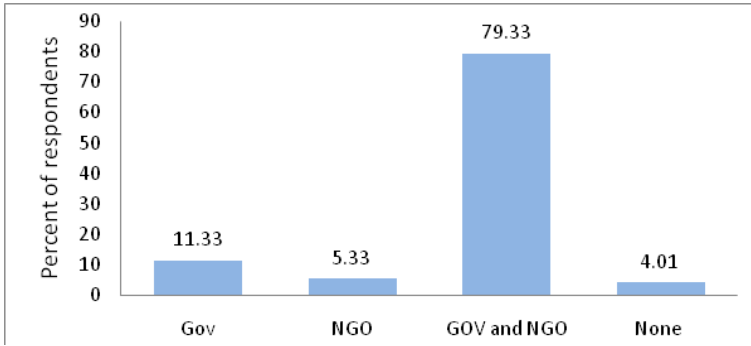


Figure 4. Level of support provided to farmers in the study area

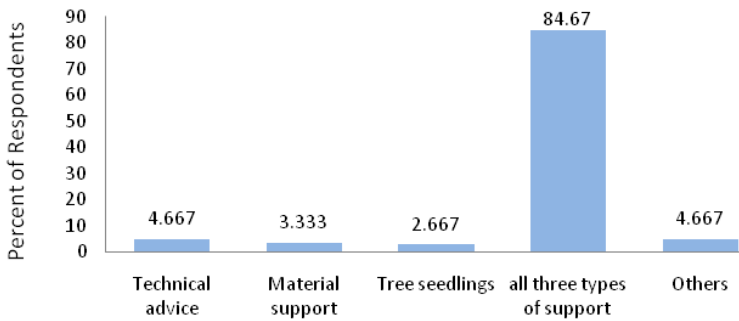


Figure 5. Kind of support provided to farmers for land management activities

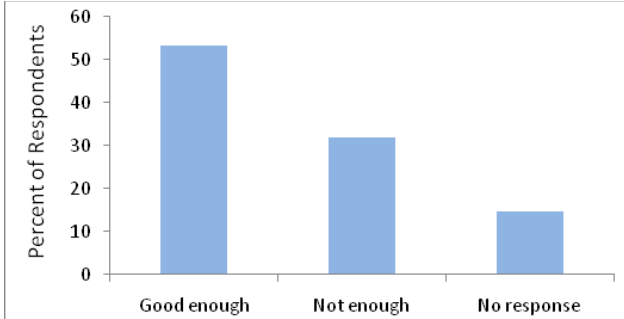


Figure 6. Opinion of respondents on the level of institutional support for land management activities

As can be seen from Table 7 and the bar charts above (Figures 4, 5 and 6), both governmental and non-governmental organizations were identified as the institutions which helped the respondents in providing the majority (79.3%) of all the necessary supports to enhance land management practices in the research area. Besides, a cumulative answer could also tell us that the government and other non-governmental institutions were working in collaboration to facilitate land management practices (summation of the responses is 100.0% for non-missing value). The kind of support obtained from the afore-mentioned institutions was: technical advices (4.7%), material support (3.3%), provision of tree seedling (2.7%), and all the three types of supports (84.7%). So, the amalgamation of various kinds and forms of support computed was 94.4%.

Therefore, the various forms of support could be inferred to contribute immensely on the farmers' efforts and motivations for enhanced change on their land management practices. What is more, farmers who answered "No" helped in providing support guaranteed 100.0% that the effect of not getting support from any institutions on land management technologies was found to be nothing. So, the variety of farmers on the need continuum of support and interventions was very wide. This finding is consistent to Tesfu (2011) in which he found both governmental and non-governmental institutions supported the farmers in the study area in the form of material provision and technical back-up in which this, in turn, contributed to decisions of farm households' level to undertake a variety of short and long-term conservation practices.

Finally, farmers also evaluated the interventions of concerned institutions on their land management practices for adequacy. About fifty-three (53.3%) of the respondents stated that the interventions on the part of the concerned institutions was rated as "good enough", while (32.0%) of them considered that it was "not enough at all"; and the other, (14.7%) viewed them as "no response". Hence, the balance beat stops at almost the mid-way for sure that there is a symmetric level of adequacy of the support and its interventional intensity to fully enhance farmers' efforts for land management practices.

6. Conclusion

Land tenure insecurity is one of the bottlenecks in natural resource management in general and land management practices in particular. Land registration and certification program has been implemented in Oromia national regional state since 2003 with the objective of registering all parcels of farm households and granting to them a legal certificate of holding to increase farmers' feeling of land tenure security. In this regard, farmers received primary book of certificate as a legal document which ensures usufruct holding right of households.

As mentioned earlier, one of the main objectives of this study was to investigate whether or not land certification contributes in motivating individual farm households to undertake various land improvement activities. As it was indicated, tenure insecurity restricts rights in land and reduces farmers' incentives to invest in land management practices. Land redistribution that took place before land certification in the area has created a sense of insecurity among the farming community. The findings of this research showed that the level of farmers' perception towards land tenure security has been improved and the farmers have felt confident as result of land use certificate. As a result of this, the comparative level of motivation to invest in land has shown considerable increase in which 86% of the farmers put significant amount of energy to improve their land. To this end, various types of land management activities were practiced to improve the productive capacity of the land.

Although the result of this research is against some previous studies it can be concluded that land tenure security and property rights eliminate anxiety and uncertainty of farmers and it has encouraged farm households to make long term investment decision on land. In this study, an effort has been made also to investigate contribution of the registration of land holding and granting land use certificates to holders in motivating farmers to better manage their landholdings through practicing various

land improvement activities. The result showed that land certification increases individuals' investment and secured land ownership considerably increased farmers' incentives to practice appropriate land management practices. The findings of this research showed that the majority of the households were engaged in one or more types of land management activities after they received land certificates. The common types of land management practices exercised by the farmers were tree planting, stone bund terracing, fencing the farmland and application of farm yard manure and compost. The chi-square analysis showed that there is statically significant relationship between land management activities and land certification and the farmers have been undertaking more land improvement activities after they received land certificates compared to pre land certification.

It is undeniable that various governmental and non-governmental (both local and international) institutions provide various types of supports to further enhance the land management efforts of farmers. With regard to this, the survey result revealed that both governmental and non-governmental organizations in the study area played a substantial role in providing the necessary support for farmers to enhance land management activities. The majority of the households agreed that support rendered from both institutions was in the form of material, training and technical support. Therefore, it is possible to conclude that the support obtained from these institutions contributed positively to enhance household's decisions to undertake some sort of conservation practices as technical support is crucial to adopt the required land conservation technologies.

Farming households face various challenges to undertake different land management practices which limit the progress of such undertakings. Based on the overall findings of the research, though the intervention of institutions was found to be evaluated as good enough and contributed to enhance land management efforts, the overall progress of such activities were not robust enough in terms of mix of planted trees and the magnitude of land management practices undertaken in which the drastically decline of some indigenous trees has been observed. Financial constraint is mentioned by some farmers for the purchase of the necessary inputs. Apart from this, farmers' parcel was not clearly demarcated and boundaries were not fixed which brought sporadic conflicts and some level of insecurity among the farming community. Furthermore, the holding certificate provided was not used as collateral to get loan from financial institutions.

7. Recommendations

Based on the major findings of the research, the following recommendations were forwarded:

- Planting different types of trees and terracing of various types as part of land management practices play a significant role in soil conservation endeavor. However, planting of trees such as *Eucalyptus globules* and *Sesbania sesban* and construction of stone bund terraces were the major conservation measures practiced by farmers in the study area. Therefore, institutions working in the area need to focus in promoting and availing seeds and seedlings of other indigenous trees as well as adaptable exotic trees. In addition, the practice of soil bund terracing is not significant and efforts should be made in promoting this type of land management practice.

- Though the level of perception of farmers towards land tenure security was found to be improved after land certification, the farmers speculated that their parcels could be expropriated at any time by the government and they expect future land re-distribution to occur. The regional government should make clear that there is no any plan for future land re-distribution. The Constitution specifies that land could be expropriated for greater public use at any time by giving the necessary compensation to the certificate holders. Both future land re-distribution and expropriation by the government undermined perceived land tenure security of the land users. At least relevant awareness creation should be done to assure the farmers that future land re-distribution will not happen.
- Clear demarcation of boundaries is very useful. Failure of providing clear demarcation of boundaries was a bottleneck on the perceived land tenure security of farmers and could be a source of land related disputes in the area, which in turn affects the progress of land management activities. Hence, it is recommended that parcels of households need to be clearly demarcated and sketched with the help of cadastral mapping system, and farmers should be provided with a sketched map of their parcels with their holding certificate as a legal document.
- Implementation of better land management practice goes hand in hand with the financial performance of individual farmers. Therefore, credit services should be made available to farmers so as to increase the financial capacity of farmers to invest on their land.

References

- Abate Tsegaye, Enyew Adgo and Yihenew Gebreselassie (2012). Impact of Land Certification on Sustainable land Resource Management in Dry land Areas of Eastern Amhara Region. *Journal of Agricultural Sciences*, 4: 201-206.
- Assefa Belay (2010). *The Effects of Rural Land Certification in Securing Land Rights: A Case of Amhara Region, Ethiopia*. MA Thesis, International Institute for Geo-information Science and Earth Observation, The Netherlands.
- Betru Nedessa, Jawad Ali and Ingrid Nyborg (2005). *Exploring Ecological and Socio-Economic Issues for the Improvement of Area Enclosure Management: A Case Study from Ethiopia*. A working Document of the Dryland Coordination Group (DCG). DCG Report No 38, May 2005. Dryland coordination Group c/o MiljeΦhuset G9 Grensen 9b, N-0159, Oslo, Norway.
- Birhanu Adenew and Fayera Abdi (2005). *Land Registration in Amhara Region, Ethiopia* Research Report 3, Natural Resources Group, International Institute for Environment and Development, 3 Endsleigh street, London WC1H 0DD, United Kingdom.
- Berhanu Gebremedhin, Pender J., Ehui S.K. and Mitiku Haile (eds) (2003). Policies for sustainable land management in the highlands of Tigray, northern Ethiopia: Summary of papers and proceedings of a workshop held at Axum Hotel, Mekelle, Ethiopia, 28–29 March 2002. Socio-economics and Policy Research Working Paper 54. ILRI (International Livestock Research Institute), Nairobi, Kenya. 75 pp.
- Bisley, T. (1995). Property Rights and Investment Incentives: Theory and Evidence from Ghana. *Journal of Political Economics*, 103: 903-937.

- Deininger, K. (2003). *Land Policies for Growth and Poverty Reduction*. World Bank, Washington, DC; Oxford University Press, Oxford, UK.
- Deininger, K., Zevenbergen, J., and Ali, D.A. (2006). *Assessing the Certification Process of Ethiopia's rural Lands*. Conference paper, Colloque international "Les frontières de la question foncière - at the frontière of land issues." Moutpellier, France.
- Desta Damene and Ignatius Mberengwa (2012). Determinants of farmers' land management practices: the case of Tole District, South West Shewa zone, Oromia National Regional State, Ethiopia. *Journal of Sustainable Development in Africa*. 14: 77-94.
- Feder, G. and R. Noronha (1987). *Land rights, systems and agricultural development in Sub-Saharan Africa*. World Bank researcher observer 2:143-169.
- Gebremedhin B. and Swinton S.M. (2003). Investment in soil conservation in northern Ethiopia: the role of tenure security and public programs. Forthcoming in *Agricultural Economics*. *Agricultural Economics*, 29: 69-84.
- Hurni, H. (2000). Assessing sustainable land management (SLM). *Agriculture, Ecosystems and Environment* 81, 83-92.
- Kabubo-Mariara J., and Linderhof V. (2003). *Tenure Security, Sustainable Land management and Poverty: Case Studies from Kenya*. Agricultural Economics Research Institute (LEI), The Hague.
- Magalata Affan Oromo, "Oromia Rural Land Use and Administration Proclamation," Proclamation No. 130/2007.
- Ogolla B. D. with Mugabe, J. (1996). *Land Tenure Systems*, In Land We Trust; Initiative Publishers, Nairobi Kenya.
- Omit, J., Parton, Ehui, S., and Sinden, J. (2000). Some Policy implications of the resurface of rural factor markets following agrarian de-collectivization in Ethiopia. *Human Ecology*, 28:585-603.
- Pender, J and Kerr, J. (1998). Determinants of farmers' indigenous soil and water conservation investments in semi- arid India. *Agricultural Economics*, 19:113-125.
- Pender J., Ehui, S., and Place, F. (2006). *Strategies for Sustainable Land Management in the East African Highlands*. International Food Policy Research Institute. Washington D.C.
- Place, F. (2009). *Land Tenure and Agricultural Productivity in Africa: A Comparative Analysis of the Economics Literature and Recent Policy Strategies and Reforms*," *World Development*, 37(8), 1326-1336.
- Platteau (1996). *The Evolutionary Theory of Land Rights As Applied to Sub-Saharan Africa: A Critical Assessment*. *Development and Change*, 27: 29-86.
- Platteau, J.P. (1996). *The Evolutionary Theory of Land Rights As Applied to Sub-Saharan Africa: A Critical Assessment*. *Development and Change*, 27(1): 29-86.
- Shimelles Tenaw, Zahidu, K.M, and Parvianen, T. (2009). *Effects of land tenure and property rights on agricultural productivity in Ethiopia, Namibia, and Bangladesh*. Department of Economics and Management. Discussion Papers no.33. Helsinki: University of Helsinki.
- Singh, K. (1994) *Managing common pool resources. Principles and Case Studies*. Oxford.
- Tesfu Kahsay (2003). *The Effect of Land Tenure Systems on Soil Conservation*

Practices in Northern Ethiopia - A Case Study of Harbru District in Amhara National Regional State (ANRS), Ethiopia.

Todaro, M. and Smith, S. (2003). *Development Economics*. Pearson Education Limited, London.

Woldeamlak, B. (2003). Land Degradation and Farmers' Acceptance and Adoption of Conservation Technologies in the Degil Watershed, Northwestern Highlands of Ethiopia, Social Science Research Report Series no.29, OSSREA, Addis Ababa.

World Bank. (1989). Sub-Saharan Africa: from crises to Sustainable growth: a long-term perspective study. The World Bank: Washington D.C.