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INSTITUTIONAL FRAMEWORKS FOR SUSTAINABLE AFFORESTATION IN ZIMBABWE

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ABSTRACT

Current institutional and management regimes for afforestation have failed to measure up to policy expectations. A close analysis of the focus of many studies conducted to date on afforestation as an alternative land use option reveal the existence of a gap in the search for an institutional framework for sustainable afforestation in developing countries, Zimbabwe included. Despite a rich array of models for both forestry and agronomy, none has been able to achieve set policy targets. Zimbabwe has vast pieces of land with potential for afforestation initiatives. As a result, afforestation has failed to proffer anticipated gains resulting in subsequent low uptake of afforestation as an alternative land use for economic development. Therefore, this research study using a qualitative research methodology sought to establish an institutional framework for sustainable afforestation in Zimbabwe. Evidence from the study indicates that afforestation can serve as a basis for economic growth had it not been for the challenges of ignorance of the benefits of afforestation, negative cultural attitudes towards forestry, institutional and capacity challenges, lack of appropriate extension services, too much time lapses before harvesting and lack of knowledge of potential business partnerships in afforestation projects. Basically, the institutional framework that maybe adopted to promote sustainable afforestation as an alternative land use for development in Zimbabwe should comprise of the following: research and development, precise regulatory and policy frameworks reforms, Incentivising afforestation, value addition, policy reforms, enhanced market access, establishment of multipurpose woodlots, agroforest development, supply chain development, improved extension services, and consolidation of projects. However, there is still need for studies on how these can be harnessed for promoting afforestation.

KEYWORDS:

Afforestation; sustainable; land use and economic development.

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1. INTRODUCTION

In recent years, a host of countries across the globe have actively sought to promote afforestation as an alternative land use for economic development through state policy and support (see Ofori et al., 2020; Lovell et al., 2017; Minang et al., 2018; Dupraz et al., 2018). However, the fly in the ointment has been the successive failure of these initiatives to achieve set policy targets (Luoranen et al., 2022; Ullah et al., 2022; Arimi&Omoare, 2021). The effectiveness of existing institutions for management of afforestation has been widely questioned since current institutions and management frameworks for afforestation have failed to achieve set policy targets (Romanova et al., 2022; Tian et al., 2018). Despite the continued failure of many of these afforestation initiatives (see Ryan, 2016; Romanova et al., 2022; Ullah et al., 2022), it is noteworthy that the world at large still regards afforestation as a viable land use option for economic development. To date, a plethora of studies on afforestation have been done (Lovell et al., 2017; Tian et al., Sohngen, 2020; Dupraz et al., 2018), what is curious is that none of the studies has seen it fit to focus on the development of an institutional framework for sustainable afforestation specifically in a developing economy like Zimbabwe. As a result, the issue of intellectual curiosity in this study is to establish an institutional framework for sustainable afforestation in Zimbabwe.

2. BACKGROUND

In recent years, forests have assumed greater importance and now are among the world's most productive land-based ecosystems and are essential to life on earth and sustainable development. The Global Forest Resources Assessment 2015 (FRA, 2015), posits that forests cover 30% of the Earth's land area or nearly 4 billion hectares (ha)— are an incredibly valuable resource, storing massive amounts of carbon, helping to purify water and air, ensuring natural biodiversity, and providing livelihoods for millions of people (see Chazdon et al., 2016; Chimhowu, Manjengwa, &Feresu, 2010; Nyikadzino, 2016). But despite the vital importance of forests, they are under worldwide assault, with the equivalent of 30 soccer fields disappearing every minute (Food and Agriculture Organisation (FAO) 2016).

In Africa, Ethiopia, Rwanda and Burundi have been the most affected as their forest resources have been almost totally depleted (FAO, 2015; Muralikrishna&Manickam, 2017). While global rates of deforestation have decreased in the recent past from a net annual forest area loss of 7.3 million ha in 2000 to 3.3 million ha in 2015, the decrease has not been even across regions (FAO,2016). Deforestation rates in some regions, especially Africa and Latin America, are still alarmingly high. Many drivers of deforestation lie outside the forest sector and are rooted in wider social and economic issues, including challenges related to reducing poverty, urbanization, and policies that favour land uses which produce higher and more rapid financial returns, including energy, mining, transportation, and especially agriculture (Assmuth&Tahvonen, 2015; Tikkanen et al., 2012; Ryan et al., 2016).

The World Bank opined that deforestation can lead to a 15-20 per cent reduction in crop and livestock yields. About 50 million people (in Africa) face acute fuel wood scarcity and 5 million hectares of Africa's upland watersheds are deforested and in urgent need of rehabilitation (Kim et al., 2021). Soil erosion and disruption of stream flow are shortening the life of reservoirs. Such challenges presents both economic, social consequences for communities, hence the need for afforestation. However, despite the growing calls for afforestation as a panacea to community problems, many initiatives have failed. Several reasons for the failure have been advanced chief among them being the negative perception of farmers towards afforestation.

Negative cultural attitudes towards forestry have also been widely reported in other countries. Forestry has traditionally not been seen as an integral part of traditional agriculture and most farmers consider forestry only as an alternative land-use for their worst land (Deuffic&NíDhubháin, 2020). In a study conducted in Finland, Selby and Petajisto (1995) find that there is a perception that converting land to forestry can sever the dynamic historical process involved in the creation of agricultural landscapes and thereby have a negative effect on local communities. Similarly in the UK, Watkins et al. (1996) find that most farmers do not want woodland on their farmland, as they see their land as being exclusively a preserve for agricultural production.

In response to the challenge of global forests loss, afforestation has been globally touted as a panacea to the challenge. Afforestation programmes have been initiated in several regions as alternative land use for economic development. However, in most of the regions, current frameworks for afforestation management seem to have failed as output has fallen well short of policy targets (see Ryan, 2016; Dupraz et al., 2018). The success of existing institutions of management frameworks in afforestation have been widely questioned (see Ryan, 2016; Lovell et al., 2017; Tian et al., 2018; Dupraz et al., 2018).

Zimbabwe has also suffered from the challenges of forest loss. Zimbabwe has continued to experience forests lost as at unprecedented level (see Muralikrishna&Manickam, 2017; Tikkanen, 2018). Evidence shows that by 2015, Zimbabwe's forest cover had declined by 36.6% from 22,164,000ha in 1990 (FAO, 2015). Zimbabwe's planted forest fell from 154,000ha in 1990 to only 87,000 in 2015 while other naturally regenerated forest fell from 21,209,000ha to 13,174,000ha over the same period (FAO, 2015). Timber Producers Federation (TPF) (2018) revealed that the commercial forests further declined from 120,000ha to the current 69 066 ha.

In order to rectify the problems of deforestation and forest loss, the government of Zimbabwe has undertaken several projects to date. Similar to many countries, Zimbabwe has sought to increase forest cover for some time (Wilson & Lovell, 2016; Perez-Silos et al., 2021).In response to the continued threat of deforestation in Zimbabwe’s rural areas, the government launched the Rural Afforestation programme (FAO, 2013). The major objective of the current rural afforestation project is not simply to establish nurseries and plantations but to develop a national afforestation programme.However, the economic incentivisation has mostly been absent in most of these initiatives (Kim et al., 2021; Ullar et al., 2023). The economic value of supporting and regulating such initiatives has not been well-captured in the market and therefore has remained undervalued (Kim & Kim, 2021; Ofori et al., 2020; Lawson et al., 2014). Such a lack of knowledge and apparent lack of economic value poses a challenge for determining land use allocation and modelling land use change (Luoranen et al., 2022; Ullar et al., 2022; FAO, 2015).

In the context of overall forest cover, the conversion of land from agriculture to forest is unusual in the global context (Ryan, 2016; Romanova et al., 2022; Ofori et al., 2020). Despite the lure of financial incentivisation from afforestation (see Ullar et al., 2023; Minang et al., 2018), the greater part of Zimbabwe’s land has remained idle. Many social forestry programmes initiated to redress the problem of unproductive land in Zimbabwe have stumbled along and eventually faded away (FAO, 2019). As a result, afforestation programmes have continually failed and potential income from unproductive land has remained unrealised.

Generally, the decline in afforestation has consequences for downstream industries such as timber processing (Beyene et al., 2019; Ofori et al., 2020; Ryan, 2016). Though pockets of research are

beginning to emerge, little has been done to interrogate the existing afforestation institutional management frameworks and the development of a new model for institutionalisation and management of afforestation as an alternative land use for economic development in Zimbabwe.

In most of the regions Zimbabwe included, current frameworks for afforestation management seem to have failed as output has fallen well short of policy targets (see Ryan, 2016; Dupraz et al., 2018). What remains worrying is that despite the failure of afforestation efforts in developing countries, Zimbabwe included, little has been done to interrogate current institutional frameworks of afforestation management so as to develop better frameworks. Despite a host of studies on afforestation have been conducted to date (see Romanova et al., 2022; Ullar et al., 2023; Lovell et al., 2017; Tian et al., 2018), an institutional framework for sustainable afforestation in developing countries such as Zimbabwe has remained elusive. Existing, institutional and management regimes for afforestation have failed to measure up to policy expectations (see Beyene et al., 2019; Amare&Darr, 2020; Ofori et al., 2020).

3. PROBLEM STATEMENT

Current institutional and management regimes for afforestation have failed to measure up to policy expectations (Romanova et al., 2022; Ullar et al., 2023; Ofori et al., 2020; Lovell et al., 2017). A close analysis of the focus of many studies conducted to date on afforestation as an alternative land use option (Ryan, 2016; Lovell et al., 2017; Tian et al., 2018; Dupraz et al., 2018) reveal the existence of a gap in the search for an institutional framework for sustainable afforestation in developing countries, Zimbabwe included. Despite a rich array of models for both forestry and agronomy (Luedeling, 2016; Ryan, 2016), none has been able to achieve set policy targets (Romanova et al., 2022; Ullar et al., 2023; Lovell et al., 2017). As a result, afforestation has failed to proffer anticipated gains (see Beyene et al., 2019; Wilson, 2016) resulting in subsequent low uptake of afforestation as an alternative land use for economic development (see Wilson, 2016; Ryan, 2016; Romanaova et al., 2022; Ofori et al., 2020; Wilson, 2016). Therefore, this research study using a qualitative research methodology sought to establish an institutional framework for sustainable afforestation in Zimbabwe.

4. AIM OF THE STUDY

To establish an institutional framework for sustainable afforestation in Zimbabwe

5. LITERATURE REVIEW

This section reviews literature oninstitutional framework for sustainable afforestation.

5.1 State of Forests In Africa

The sustainability of plantation forestry has become an issue of wide interest and concern. In recent years, a host of countries across the globe have actively sought to promote afforestation as an alternative land use for economic development through state policy and support (see Ofori et al., 2020; Lovell et al., 2017; Minang et al., 2018). Afforestation is increasingly valued for its potential to enhance ecosystem services and is being actively promoted in many countries through state policy and support (Romanova et al., 2022; Ullah et al., 2023; Arimi&Omoare, 2021).

Despite humanity's dependence on forests, the earth's forest area continues to shrink. While global rates of deforestation have decreased in the recent past from a net annual forest area loss of 7.3 million ha in 2000 to 3.3 million ha in 2015, the decrease has not been even across regions

(FAO,2016). Deforestation rates in some regions, especially Africa and Latin America, are still alarmingly high. Many drivers of deforestation lie outside the forest sector and are rooted in wider social and economic issues, including challenges related to reducing poverty, urbanization, and policies that favour land uses which produce higher and more rapid financial returns, including energy, mining, transportation, and especially agriculture (see Assmuth&Tahvonen 2015; Tikkanen et al. 2012; Ryan et al., 2016).

If left untamed, deforestation poses significant challenges to the livelihoods of communities. A recent World Bank report states that deforestation adversely affects the quality of life both rural and urban poor (World Bank, 2019). The World Bank opined that deforestation can lead to a 15-20 per cent reduction in crop and livestock yields. About 50 million people (in Africa) face acute fuel wood scarcity and 5 million hectares of Africa's upland watersheds are deforested and in urgent need of rehabilitation (Sustainable Biodiversity Management, 2019). Soil erosion and disruption of stream flow are shortening the life of reservoirs. Such challenges presents both economic, social consequences for communities, hence the need for afforestation.

5.2 Zimbabwe and Its Forests

Zimbabwe has continued to experience forests lost as at unprecedented level (see Muralikrishna&Manickam, 2017; FAO, 2017).Forest area designated for production fell from 2,216,000 ha in 1990 to 1,406,000 ha in 2015 (FAO, 2017). Living forest biomass fell from 1483 million tonnes in 1990 to 941 million tonnes in 2015 and both public and private ownership of forests has been declining over time between 1990 and 2015 (FAO, 2015). The depletion rate translates to over 60 million trees a year against the current planned planting rate of only 15 million trees.

Tobacco curing alone has contributed to 15% of deforestation due to dependence on fuelwood for curing by 90% of tobacco farmers (FAO, 2018). Increased mining activities following recent discoveries of gold, diamonds, chrome and coal have resulted massive clearance of bio-mass as new mines were developed and old mines expanded. Furthermore, an increase in the population of newly resettled areas has resulted in accelerated clearance of forests and woodlands for cultivation. Land area under cultivation increased by 14% between 1992 and 2008 with close to 70,000 ha being converted to agriculture use annually (FAO, 2018). It is when juxtaposed against this rate of forest loss that, the need for an institutional framework for afforestation assumes heights of significant proportions.

5.3 Afforestation Initiatives in Zimbabwe

In response to the alarming forest depletion rate, the government has initiated a number of programmes in order to promote sustainable management of the forest resources. The Forestry Commission has been on a massive tree planting programme nation-wide since 1992. As from 2005 an average of 8.1 million trees were planted with a survival rate of about 65 to 70% (Nhekairo&Gumbie, 2013). This has been achieved through initiatives such as the national tree planting day, schools tree growing and tree care competitions and also at special commemoration such as International Forest Day, World Environment Day among others.

In order to consolidate these efforts, the Ministry of Environment embarked on a five-year National Tree Planting Programme in the year 2015 with a view to increasing the country's forest cover and reduce deforestation. This programme involved the planting of 75 million trees nationwide covering a total area of 45 740 hectares over five years (Government of Zimbabwe, 2016). This translates to an annual tree planting rate of 15-30 million trees covering 9 148 hectares yet falling short of the 60

million trees that are lost annually through deforestation. FAO (2015) statistics revealed that planted forest also declined from by 43.5% from 154,000 ha in 1990 to 87, 000 ha in 2015. Thus, one may conclude that such initiatives have failed as they have failed to achieve set policy targets. Depletion of forests in Zimbabwe is taking place at an alarming rate as the country lost 36.6% of its forest area between 1990 and 2015 (FAO, 2015). It is evident from the statistics presented above that tree-planting activities in Zimbabwe have been shrinking. Thus, from this evidence one may conclude that institutional and legal frameworks for sustainable forest management are weak.

Evidence has shown that tropical ecosystems in poor countries are facing greatest threats of deforestation and this is mainly attributed to weak institutions and limited financial resources (Perez-Silos et al., 2021; Chezdon et al., 2020). Pressure on global forests is expected to increase with increasing world population that is projected to rise from the current 7.6 billion to around 10 billion in 2050 in addition to a corresponding rise in global demand for food estimated to grow by 50 percent over that period. Nations of the world acknowledge that one of the global challenges will be on how to increase agricultural production and improve food security without reducing forest area (FAO, 2018).

The consequences of unsustainable forest utilization and malpractices have social, economic and environmental dimensions. Economic consequences of forest depletion include limited supply of raw materials to the timber value chains, loss of foreign currency earnings and the eventual destruction of forest business and loss of investor confidence. Some of the social consequences include loss of jobs as company closures occur as well as loss of a source of livelihood for vulnerable groups particularly those in the rural areas. Forest depletion also leads to environmental degradation through increased soil erosion, siltation of rivers and desertification among other effects.

5.4 Causes of The Poor Adoption and Implementation 0f Afforestation Initiatives

In most of the regions, current frameworks for afforestation management seem to have failed as output has fallen well short of policy targets (see Ryan, 2016; Dupraz et al., 2018). the economic incentivisation has mostly been absent in most of these initiatives (Ullar et al., 2023). The economic value of supporting and regulating such initiatives has not been well-captured in the market and therefore have remained undervalued (Kim & Kim, 2021; Ofori et al., 2020). Such a lack of knowledge and apparent lack of economic value poses a challenge for determining land use allocation and modelling land use change (Luoranen et al., 2022; Ullar et al., 2022).

In the context of overall forest cover, the conversion of land from agriculture to forest is unusual in the global context (Ryan, 2016; Romanova et al., 2022; Ofori et al., 2020). Despite the lure of financial incentivisation from afforestation (see Hull et al., 2016; Minang et al., 2018), the greater part of Zimbabwe's land has remained idle. Many social forestry programmes initiated to redress the problem of unproductive land in Zimbabwe have stumbled along and eventually faded away (FAO, 2019). As a result, afforestation programmes have continually failed and potential income from unproductive land has remained unrealised.

In Zimbabwe, many afforestation programmes initiated to address the problem of agriculturally unproductive land have stumbled along and eventually faded away (Gwaze&Marunda, 2014; Marufu, 2014; Nyikadzino, 2016). Generally, the decline in afforestation has consequences for downstream industries such as timber processing (Beyene et al., 2019; Ofori et al., 2020). Though pockets of research are beginning to emerge, little has been done to interrogate the existing afforestation institutional management frameworks and the development of a new framework for

institutionalisation and management of afforestation as an alternative land use for economic development in Zimbabwe.

6. THEORETICAL FRAMEWORK

Theories in this study are the lens which facilitates our understanding of the processes, issues and forces at play in the phenomena under investigation. This study derived illumination from a variety of inter-disciplinary theories. In order to develop an institutional framework for sustainable afforestation in Zimbabwe, a theoretical framework which comprises a constellation of the following theories Theory of Structuration (TS), Land Rent Theory (LRT), The Stakeholder Theory (ST), Sustainability of Livelihoods Framework (SLF), and Forest Transition Theory have been adopted. The use of multiple related theories enhances the researcher's understanding of the phenomenon under study and helps to increase the validity of the findings (Ngulube, Mathipa& Gumbo, 2015). Although each of these theories has explanatory validity in the proposed study, the majority of the theories cited above fall short in scope in terms of illuminating all the phenomena 'under investigation. Hence, most of these theories could be regarded as having mid-range explanatory validity. After a critical analysis of all the 'theoretical jackets' above, the Stakeholder Theory emerged as overarching, with attributes that gives it explanatory validity to all the major themes covered by this study. Its significance is overarching as it helps to explain the inter- playing factors which determine land use and decision making in land use.

7. RESEARCH METHODOLOGY

Qualitative research method was used to prosecute the study. Data collected from the primary sources were mainly in-depth interviews, oral tradition and key informants interviews (20 respondents). Content analysis was also used to aid data collection. Information obtained from both primary and secondary sources were used in the analysis and interpretations of study findings. The people targeted as key informants were purposively selected from of farmers, farm boards like Agritex, Ministry of Lands and Agriculture, EMA, Agricultural funding institutions egAgribank, Women's Bank, Agriculture training institutions egGwebi Agricultural College, Chinhoyi University of Technology (specifically school of Agriculture, Ministry of Local Governance, Rural District Councils, Chiefs, Headmen, Kraal heads, and other relevant bodies/individuals with relevant knowledge to the phenomenon under study. The study was conducted in Mashonaland West.A thematic approach was used to analyse the data collected. Observation was used to triangulate findings.

8. RESULTS: INTERPRETATION AND SYNTHESIS

This paper interrogated the state of afforestation and strategies that may inform the institutional framework that can be used to spur sustainable afforestation development in Zimbabwe.

8.1 State of Afforestation in Mashonaland West Province

Generally, study findings point towards a limited number of farmers as being in afforestation.

8.1.1 Afforestation as an alternative land use

Amidst the continued failure of traditional agricultural production systems in meeting policy targets in developing countries, there has been a gradual paradigm shift towards afforestation. Narratives below provide an insight into this paradigm shift from traditional crop production to afforestation:

> *I have established this fast growing, eucalyptus forest out of the interest to resuscitate the environment that is depleting because of lack of trees.* ***(Cotriana, an afforestor)***

> *I chose to plant, eucalyptus because Forestry Commission researchers are promoting their new breeds which have a faster growth rate and drought and disease tolerant..****(Doryoton, an afforestor)***

Evidence from the study highlights that afforestation, though still in its infancy stage now characterize some of the land use activities in the province. A close look at the existing number of afforestation initiatives in the province points towards an embedded absence of a spirit of afforestation. These negative cultural attitudes towards forestry are not only unique to Zimbabwe, but have also been widely reported in other countries. According to Amare and Darr (2020), afforestation has traditionally not been seen as an integral part of traditional agriculture and most farmers consider forestry only as an alternative land-use for their worst land. Generally, a number of studies that have been conducted across the globe bears testimony to the fact that there is a perception that converting land to forestry can sever the dynamic historical process involved in the creation of agricultural landscapes and thereby have a negative effect on local communities (see Bastin et al., 2019; Beyene, 2019; Eurostat, 2016). Most farmers do not want woodland on their farmland, as they see their land as being exclusively a preserve for agricultural production. It can be construed from the study findings that generally, in the context of overall forest cover, the conversion of land from agriculture to forest is unusual amongst local farmers in Zimbabwe. This stems from the fact that the country lacks a `farm forestry' tradition within agriculture. Such meager figures, which is still less than 1% is a clear indication that there is underutilisation of land.

8.1.2 Limited Level of Investment in Afforestation

The majority of potential afforestors develop cold feet over the time it takes to realize benefits from an afforestation initiative. Accounts presented below illustrate how farmers are reluctant to undertake long afforestation due to the long period taken to realize returns:

> *I could not put the greater portion of the farm into afforestation because in as much as I know the benefits of afforestation, it is still unclear whether the direct financial benefits of this woodlot are worth the initiative, given the above seven-year mark to harvesting* ***(Cotriana, an afforestor)***

> *I have not ventured into afforestation because, for me, five years needed to harvest these gum trees is equivalent to five cycles of maize, soyabeans and sorghum during summer cropping and five cycles of wheat during the winter cropping season.* ***(Zepn, Farmer).***

> *The problem with taking up afforestation as a business is that, looking at my age right now, I will not enjoy the proceeds. This is because afforestation is a venture that you can only take with the future generation in mind, not for your own sake.* ***(Fungie, Farmer).***

A close analysis of the sentiments expressed above highlights an aversion to long term investments among local farmland owners. Such findings are also echoed in literature. Historically, reforestation has been a strong long-term investment for landowners. Depending on the environmental conditions, an afforestation project takes an average of 7-10 years before reaching maturity to offer meaningful returns to the farmer. Sustainable afforestation therefore implies a typical long-term investment in a

forestry project. FAO (2018) highlighted that forestry projects require high rates of financing at the beginning, forests take some time to deliver revenues and benefits. Hence investors face high initial costs and delayed returns, which demands the availability of initial investment capital and the ability to wait for revenues (FAO, 2017). Such huge financial injections needed at the initial stages of afforestation projects act as hindrances, and further the uncertainty surrounding most farms discourage afforestors and potential afforestors from investing in afforestation.

Evidence from the study highlight that there has been limited investment into afforestation projects in Mashonaland West. Study findings highlight that of those that have invested in afforestation, they have only done so on small portions of their farmland. The sentiments can be captured in the voices captured below:

> *I have dedicated thirty-hectares of my six hundred and fifty hectares a woodlot. The best I can do is to maintain the thirty hectares dedicated to date as a woodlot.* ***(Cotriana, an afforestor)***

> *I grow tobacco and the regulator (Tobacco Industry & Marketing Board (TIMB), requires me to grow 0.3 hectares of eucalyptus for every hectare of tobacco I plant.Given that I plant twenty hectares of tobacco, annually, I would therefore need six hectares of my sixty-eight-hectare farm under eucalyptus. I only put two hectares under eucalyptus.* ***(Abielah an afforestor)***

From the sentiments above, one may conclude that afforestation constitute an insignificant part of land use considering the farm sizes. These findings are supported by the Ministry of Lands (2020) which provides the following statistics for the land under afforestation in the 7 Districts in Mashonaland West: Mhondoro Ngezi District: no afforestation against a total land area of 427 936.51 (Ha), Kariba District: 0.05% against a total land area of 823 092.37(Ha), Chegutu District: 0.04% against a total land area of 938 580.15 (Ha), Sanyati District: 0.19% against a total land area of 481 931.77 (Ha), Zvimba District: 0.10% against a total land area of 608 193.91 (Ha), Hurungwe District: 0.04% against a total land area of 1 983 580.15 (Ha) and Makonde District: 0.38% against a total land area of 875 678.06 (Ha). From these findings, it can be said that the size of the land under afforestation is very insignificant indicating limited investment.

8.1.3 Hectrage under afforestation

Evidence from research findings that the size of afforested areas, including reforestation are too little, if compared to the size of open or sparsely populated forests that need reclamation. These sentiments can be captured in the voices presented below:

> *I have dedicated thirty-hectares of my six hundred and fifty hectares a woodlot.* ***(Cotriana, an afforestor)***

> *I only put two hectares under eucalyptus."* ***(Abielah an afforestor)***

Generally, it can be construed from the sentiments shared in the narratives above that the hectares under afforestation in Mashonaland West Province are almost insignificant when compared to total land are available. From these findings, it can be said that the size of the land under afforestation is very insignificant, hence the findings can be said to be in line with literature. Afforestation is being taken as a support venture not as the key land use amongst farming communities.

8.1.4 Number of farmers who are into afforestation

The uptake of afforestation among farmers in the province remains low. The findings presented below illustrates that afforestation adoption remains alien to most of the farmers in the province. Such sentiments are shared in the narratives presented below:

> *Afforestation seems to be a preserve of large scale commercial farmers and schools, mainly in the rural Mashonaland- West who normally plant at least half a hectare of eucalyptus. A1 farmers are usually left out and most of them have the perception that, eucalyptus trees reduce soil fertility and provide too much shade that retards crop growth, hence can not grow such trees even for wind break around their small pieces of land.* ***(Deonnr, District Agritex Officer)***

Generally, sentiments shared from the narratives above illustrate that only a limited number of farmers are into afforestation. A possible explanation for the limited adoption of afforestation within the province might be the fact that the conversion of land from agriculture to forest remains unusual among landowners. Further, a close look at the findings also noted the existence of a number of challenges that militates against the adoption of afforestation. One of the major challenge faced in the promotion of afforestation as an alternative and sustainable land use option for economic development in Zimbabwe is inadequate knowledge of the potential economic gains that may accrue from afforestation initiatives. These findings share much in common with Beyene et al (2018) who opines that there is a general lack of economic knowledge in relation to the returns from afforestation and a lack of management expertise in relation to appropriate management (silviculture) of forests (also see Flemming et al., 2019; Jara-Rojas et al., 2020; Ryan, 2016). Thus, it can be construed from the study findings as well as from extant literature that forestry has traditionally not been seen as an integral part of traditional agriculture and most farmers consider forestry only as an alternative land-use for their worst land.

8.1.5 Limited knowledge about afforestation

As the farm afforestation decision essentially involves an inter-temporal land use change, farmers need comprehensive information on forest market returns under different environmental conditions and forest management regimes. Thus, knowledge about afforestation and its benefits can be said to be the bedrock informing decision on whether to invest or not in afforestation. Evidence from the study demonstrate that farmers are not well-informed about the dynamics of afforestation. Such sentiments are captured in the narratives presented below:

> *There is a gap, they are not informed. There are so many misconceptions especially with eucalyptus, where they are said to have high water usage, hence farmers are skeptical about adopting afforestation as an alternate land use* ***(Forestry extension officer)***.

The narrative above illustrates that ignorance about afforestation and its related issues remains a challenge in the province. The generality of the study findings on afforestation challenges highlight poor education and training as one of the hindrances to the uptake of afforestation as an alternative and sustainable land use. The limited knowhow about the dynamics of afforestation also explains the general failure of most afforestation initiatives as well as the limited uptake of such projects.

8.1.6 Limited funding

Insight from the study findings show that afforestation ventures require a lot of capital for land preparation and maintenance of the woodlot when the trees are still small. Study findings illustrated that afforestors and potential afforestors suffer from an absence of funding. Such sentiments can be perceived in the narratives presented below:

> *The management aspect comes at cost. Right now we are supposed to be getting a fair share of the afforestation fund from fiscals' but we are not getting commensurate or adequate funds to support* ***(Afforestor).***

> *There is a huge cost on the upkeep of these trees and unfortunately these are not seasonal crops. We are talking of 9 years being the minimum. We expect about 15-20yrs of investment is a tree crop because of other side factors that may retard growth. Creating fireguard are costs though they will never be as costly as having your forestry destroyed by fire* ***(Afforestor).***

Generally, it can be construed from the narratives above that most farmers felt that costs of supporting an afforestation initiative are beyond their means. According FAO (2018) forestry projects require high rates of financing at the beginning, forests take some time to deliver revenues and benefits. Hence investors face high initial costs and delayed returns, which demands the availability of initial investment capital and the ability to wait for revenues (Nyakatonje, 2023). Financial challenges have meant that responsible authorities lack the finances to hire or train experts in the field of afforestation, provide funding to afforestors.

8.1.7 Poor land tenure systems in use

Farmers decried the land tenure in Zimbabwe which made it difficult for them to venture into long term investments like afforestation. The compounding impact of insecure land tenure on farm investment is aptly illustrated in one of the narratives presented below:

> *As such, it ceased to be a transferrable asset. Investment in farming has been imperiled because necessary permits, state land leases, and "offer letters' do not provide security of tenure* ***(Extension officer)***

A close analysis of sentiments presented above, farmers in Zimbabwe only have usufruct rights to land as they have no title deeds. Generally, this uncertainty and the risk associated with such landownership militate against long term investment on farms. Hence, long term investment projects like afforestation suffer. Such findings are in tandem with literature. In Zimbabwean farmers and development practitioners have for a long time been advocating for security of tenure in the agricultural sector (Dube&Guveya, 2013). The problem of land ownership is one of the most serious problems in the history of forest lands (Beyene et al., 2019; Ullar et al., 2021). It is generally argued that lack of tenure security in the farming sector constrains farmers' access to credit, farm investments, technology adoption and sustainable agricultural development and productivity. Secure tenure rights are a critical foundation for local economic development. This insecurity arose because the land on which new farmers were settled was now owned by the government and was, therefore, worthless as collateral. Study findings bears testimony that tenure insecurity can demotivate long term investment into livelihoods and adoption of improved farming practices, it might constrain farmers' ability to use their land as collateral for credit or make substantive or long term investment on farms.

Secure tenure is an anecdote for improved land use (Higgins et al., 2018; Tseng et al., 2021; Lawry et al., 2017).

8.1.8 Inadequacy of afforestation extension services

Generally, study findings highlight the inadequacy of afforestation extension services in the province. Such sentiments are illustrated in the narratives presented below:

> *Current extension services are not adequate because the limited numbers of extension officer on ground cannot bridge the gap in proper land use planning for instance forestry common has one officer in the whole district. The officer in some instance is not even mobile to visit farmers, teaching them on the practices in afforestation* ***(Fungie, Farmer).***

> *Basically, there are fewer extension officers for afforestation services as compared to agricultural extension services for crops and livestock. Government must surely do something.* ***(Contriana, Farmer/Afforestor).***

A close analysis of the sentiments expressed above highlights the inadequacy of extension services geared towards supporting afforestation initiatives in the province. Extension services provides a backbone to afforestation initiatives. In broad sense extension is an education process that informs, convinces and links people. It facilitates flows of information between farmers and other resource users, administration managers and leaders (Tafere&Nigusse, 2018; Ullar et al., 2021).

Extension officers who took part in the study also felt inadequate for the task assigned. Such sentiments can be captured in the voices presented below:

> *The area I am supposed to service is too big. I have three districts to service but no vehicle to use when moving around farms. We all rely on one vehicle that is well serviced and services mainly the provincial office. That makes monitoring of woodlots very difficult.* ***(Forestry extension officer)***

> *We cannot raise enough nursery for the farmers.* ***(Forestry extension officer)***

The sentiments above show that, inadequate government support for afforestation is crippling the growth of afforestation as a sustainable farming venture like any other crops. This challenges have also been noted in extant literature. In another study conducted in Limpopo Province (South Africa) by Maponya, Venter, Du Plooy, Backeberg, Mpandeli andNesamvuni, (2019) results also indicated that less than 45% of farmers received extension services, mainly through formal extension service. Bukomeko (2012) had similar findings of inadequate forestry extension services in lira district of Uganda. To further buttress the compounding issue of "the missing link", that is forestry extension services, FAO (2017) posits that the planting of trees is not fundamentally a forestry issue, it is a farm system and social issue and therefore there is a need for an `extension approach' which treats trees as one of many potential productive activities that must be incorporated into the farm system.

8.1.9 Aversion to long-term investment

Generally, respondents lamented the long-time taken to realise returns from afforestation. Such lamentations are illustrated in the narratives presented below:

> *I have not ventured into afforestation because, for me, five years needed to harvest these gum trees is equivalent to five cycles of maize, soyabeans and sorghum during summer cropping and five cycles of wheat during the winter cropping season* ***(Zepn, Farmer).***

> *The problem with taking up afforestation as a business is that, looking at my age right now, I will not enjoy the proceeds. This is because afforestation is a venture that you can only take with the future generation in mind, not for your own sake.* ***(Fungie, Farmer).***

The sentiments reveal that generally, afforestation is a long term investment that takes years to reach maturation. As a result, farmers will take long to understand the viability of afforestation as an alternative land-use. Farmers in most developing countries, were afforestation is still in its infancy characterised by limited knowledge about the returns of such investment, famers tend to develop aversions to such ventures.

8.1.10 Challenge of having small farms

Study findings pointed towards having small farm sizes being a hindrance to afforestation. Such sentiments can be captured in the narratives below:

> *I did not venture into afforestation because my farm is small. Half of the 390 hectares farm is under cultivation. The other half is for cattle ranching. So apart from my orchard, I have no other space to spare for afforestation* ***(Farmer)***.

> *I could not make an active move into afforestation because of the size of my farm. It is only 125h of which 80h are arable and the rest is low land that gets flooded during the rain season* ***(Farmer).***

Evidence from the above findings points towards farm sizes being a determining factor in the decision to adopt afforestation as a farm economic activity.However, there are other factors at play beside farm size. The insecure land tenure system may also explain the averse attitude among farmers despite owning large tracts of land. These resettled farmers lack landownership rights and according to Nyakatonje (2023) are either unable to secure bank loans for investment due to lack of collateral security or are simply afraid of long-term investment due to the uncertainty with their land ownership. Thus, it can be said that a number of issues shape farmer decisions when it comes to afforestation.

9. INSTITUTIONAL FRAMEWORK THAT MAYBE ADOPTED TO PROMOTE SUSTAINABLE AFFORESTATION IN ZIMBABWE

Basically, the institutional framework that maybe adopted to promote sustainable afforestation as an alternative land use for development in Mashonaland West should comprise of the following: research and development, precise regulatory and policy frameworks reforms, Incentivising afforestation, value addition, policy reforms, enhanced market access, establishment of multipurpose woodlots, agroforest development, supply chain development, improved extension services, and consolidation of projects.

9.1 Improving research and development

Findings isolated Research and Development as a mechanism that can assist in developing sustainable afforestation as an alternative land use for development in Zimbabwe. Such sentiments are embodied in the following narratives:

> *Farmers' concern over afforestation is the time taken before one could start reaping benefits. There should therefore be extensive research on the possible means to maximising revenue*

from woodlots before actual harvest. Technology can even focus on genetic modification of tree species as long it increases growth rate without compromising on quality of timber. ***(Contriana, Farmer/Afforestor).***

*Afforestation mechanisms research should come up with technologies that conquer other crops in terms of yield per square meter. There is need for research on the suitable varieties for afforestation in certain areas, find answers on how to reduce time frames to maturity for a lot of plant varieties as well as development of the right mechanisms and affordable technologies for use in afforestation****(Fungie, Farmer).***

It can be construed from the sentiments expressed above that research is a vital cog in development. Findings indicate a paucity of related studies on the challenges and strategies for optimizing afforestation in the Zimbabweancontext. Most respondents shared similar sentiments that there is limited research output which has affected progress in efforts to gainfully exploit the benefits of afforestation, promote production as well as generally improve afforestation. Research and development should lead to lasting solutions on what relevant authorities should do to ensure the establishment of mechanisms for optimizing afforestation in Zimbabwe. All things being equal, research should lead to a result in production of new knowledge, systems, operations, processes or facts translating to transformation as well as improved standards of life (see Kariuki&Misaro, 2013). Therefore research and development are not treated separately in this study since they affect each other. It can be summed from these findings that scientific and technical support is key to sustained success in Afforestation. Such findings are in synchrony with Chigumira et al (2019) who posit that in Burkina Faso, careful forest seed selection and breeding as well as support for village nurseries have helped ensure that planted trees are adapted to local ecosystems, and that survival rates are high.

9.2 Precise regulatory and policy frameworks reforms

Precise regulatory and policy framework reforms were identified as a critical issue relating to developing afforestation in Zimbabwe. It provides guidance to operations and protecting the interests of all parties involved. The majority of respondents cited policies, codes of practice, and guiding rules and regulations as critical in the development of best practices for developing afforestation as a sustainable land use option for economic development in Zimbabwe. Narratives below are illustrative of respondents viewing policies central to improving the adoption of afforestation as a sustainable land use option for economic development:

There is always need for policy that would harness the need of different stakeholders in afforestation. Such policy can only be developed through an extensive stakeholder engagement ***(Honia, Rural District Council Officer).***

We would like to see policies that promote foreign direct investment in afforestation. ***(Nels, Farmer/ Afforestor).***

Respondents noted with concern a number of issues with regards to the current regulatory and policy framework on afforestation in Zimbabwe. What stands out from the sentiments expressed above is the inadequacy of existing policies in afforestation. Evidence from the study points towards a number of afforestation challenges that are being experienced byafforestors/farmers which under normal circumstances should be addressed through policies. Such challenges include limited investment in afforestation, limited stakeholder support in afforestation, poor markets among a number of other challenges. Study findings illustrate that effective policy frameworks are essential in developing a framework for effective development of afforestation as a sustainable on-farm economic activity in Zimbabwe. In this study, policy frameworks are public documents that include statements that provide

guidance on institutional operations, such as goals and aspirations for how they should be achieved. In this case, such structural issues are used as a reference point for all efforts to develop afforestation in Zimbabwe. Given this understanding, it was intriguing to note that the majority of respondents reiterated that the lack of an effective policy framework hampered the general implementation of effective efforts to develop afforestation in Zimbabwe.

Further sentiments from the consulted stakeholders were that although Zimbabwe has a relatively sound legal framework, the existing framework lacks robust enforcement. TPF (2018b) cited a number of conflicts in the national legislation that the forest plantations are grappling with. These include the Mines & Minerals Act vs. Forest Act where the former confers lands rights to the miner over the forester. Linked to this is where the Ministry of Mines is offering Mining Special Grants in Gazetted Forests or gold panning activities being conducted in gazetted forests like Tarka and Maswera Forests. The other area of conflict is between the Land Resettlement Act vs. Forest Act where forest land is being converted into agricultural land. Further, there are law overlaps and duplications for example the management of fire under the Statutory Instrument 7 of 2007 is under EMA but this instrument is derived from the Forest Act being managed by Forestry Commission. Moreso, the principal forest Act is old and does not capture some of the emerging issues of sustainable forest management. For example, the current Forest Act does not adequately cover issues with regards to marketing and market value of afforestation products. As a result one of the stakeholders had the following to say:

> *There should be policy on how forestry resources from afforested areas will be sold, and making the farmer aware of the value chain involved.* ***(Contriana, Farmer/Afforestor).***

It can be concluded from the study's findings that the management of forestry plantations is not covered by the existing forest regulations. As advocated in the Draft National Forest Policy (Zimbabwe Environmental Law Association (ZELA), 2017), the other legal gap is the absence of promotion of commercialization of forest goods and the creation of an environment that facilitates sustainable trading in forest produce.

Further, study findings emphasises that some of the prerequisites for sustainable land management are land-tenure security. The problem of land ownership is one of the most serious problems in the history of forest lands (Beyene et al., 2019; Ullar et al., 2021).In the Zimbabwean context, evidence from study findings show that with expropriation, land became the property of the government. The compounding impact of insecure land tenure on farm investment can be aptly captured in the voice captured below:

> *As such, it ceased to be a transferrable asset. Investment in farming has been imperiled because necessary permits, state land leases, and "offer letters' do not provide security of tenure* ***(Extension officer)***

A close analysis of sentiments presented above, farmers in Zimbabwe only have usufruct rights to land as they have no title deeds. Secure tenure rights are a critical foundation for local economic development. Pathways to sustainable afforestation development will be fundamentally strengthened by legal frameworks that recognize and secure the land ownership rights of local communities and farmers (FAO, 2018).

Further, evidence from the study also shows that respondents felt that policy reforms should be accompanied by policy enforcements. Such sentiments can be captured in the voices presented below:

Farmers should be mandated to possesses at least some form of wood lot wherever they are. This should be obtainable at law. ***(Extension officer).***

Enforcement is really needed. It's one thing telling people not to cut trees and educating them on the benefits of trees and it take extra effort now to ensure the trees are not really cut. Even if we plant, where rules and regulations are not enforced, then we can never have sustained forests ***(Farmer/Afforestor)***

Laws enforcement agents must be actively involved in the control of cutting of trees ***(Farmer/Afforestor).***

A close analysis of the voices above highlights that currently policy enforcement is missing. From the sentiments shared above, one may conclude that there are existing policies on afforestation, however the missing link has been on enforcement. Evidence from the synthesis of literature highlights that the challenge of policy implementation is a common phenomenon in Africa.Ajulor (2018) posits that Africa has severe challenges in implementing policies and programmes aimed at sustainable development such as its inability to ensure participation and poor policy change management. To Yulianto et al (2017), policy implementation is critical to the success of any policy since it constitutes the epicenter of the policy process.

There is need to timeously and regularly reflect on the policy framework changes in the dynamic environment. There for one may argue that policy issues should not be taken lightly, and policy making, review and implementation should involve different stakeholders and those in authority (see Easton's 1965 Political Systems Model). However, Bourdier's (1984) Distinction Concept argues that the taste of those in power and the elite tends to override those of lower classes in society. This means that policy can be dictated and in the process it can negatively impact on afforestation initiatives. Policy plays a crucial role in governing and regulating the afforestation practice. Evidence from the study findings showed that there is need for policy improvement in order to enhance and support afforestation in Zimbabwe. In a nut shell, only precise regulatory and policy frameworks can help in bringing about effective mechanisms for optimizing afforestation initiatives. Thus, there is need to review and revamp existing policies so that they improve lead to a resuscitation and improvement of afforestation in Mashonaland West Province.

9.3 Improved afforestation extension services

The improvement of extension services was cited by a number of respondents as vital in efforts to promote sustainable afforestation as an alternative land use for development in Mashonaland West. Generally, stakeholders perceived the adequate forestry extension services as the difference maker in the drive to optimise the adoption of afforestation as a sustainable alternative land use option for economic development. The voices presented below demonstrate the centrality of improved afforestation extension services:

…….but maybe for a start as we want to operationalize the government proposed tree planting models, we need more extension officers for education and enforcement to be successful. Thus we cannot rule out the need to recruit more extension officers ***(Forestry extension officer).***

There is the issue of extension officers. We do not even know whether they are there or not. If we have possibly they are incapacitated to cover the areas allocated to them. So the focus

> *will either be to capacitate them by providing transport or increasing the number of forestry officers so as to increase their visibility* ***(Farmer).***

A close look at the findings above highlights that adequate extension forestry services provide impetus to the adoption of afforestation as an on farm economic activity. Their role is important in that in the absence of extension services, expert advice to farmers on afforestation ceases resulting in some ventures collapsing. Thus, from the findings one may conclude that afforestation extension services are a must in the success of afforestation as an on farm economic activity. Such findings are in synchrony with FAO (2017). According to FAO (2017), the planting of trees is not fundamentally a forestry issue, it is a farm system and social issue and therefore there is a need for an `extension approach' which treats trees as one of many potential productive activities that must be incorporated into the farm system. These findings concur with Le et al. (2012) on whose study in Philippines noted that most smallholder woodlots produce merchantable volumes far less than their site potential, resulting in disillusionment of smallholders when there are no adequate expert advice services on the first years into afforestation. This is attributed to the fact that, these new afforestors may not understand the ways that trees are valued (that is, whether trees are sold simply by the number of logs, the diameter or length of each log, by the log volume or as partially sawn log flitches) or the effect of location on the log price they are likely to receive (for example, price at the stump, at the road side or at the mill door). All these have an impact on the overall contribution of afforestation on economic development, thus afforestation extension services should be upheld if afforestation is to be taken as a sustainable, alternative land-use option in the province.

9.4 Education and training

According to the research findings, education and training are another strategy and mechanism for developing best practices in the development of afforestation in Zimbabwe. In this study, education and training are viewed as means of imparting knowledge and skills on business-related issues. The two terms are used interchangeably to inform people about what they should know about afforestation development. In most of their responses, stakeholders who participated in study used terms like knowledge acquisition, skill equipping, enlightening and providing relevant information, teaching, learning, programs, and schooling, revealing the importance of the strategy in providing basic information about effective ways to develop afforestation Zimbabwe. Narratives below are illustrative of respondents viewing education and training as central to improving the adoption of afforestation as a sustainable land use option for economic development:

> *There would just be education of people for instance one can be educated on afforestation as an alternative land use especially when they have underutilised land* ***(Forestry Extension Officer).***

> *There is need for vigorous reach out campaigns that seek to educate the farmer. Cost breakdown for plantations should be availed to farmers so that they make informed decisions. Education should be an on-going exercise with so many contact sessions and farm visits by forestry officers* ***(Afforestor).***

It is evident from the sentiments shared above that most development efforts in afforestation plans are hampered by ignorance. As a result, stakeholders who partake in this study proposed that eradicating ignorance through related knowledge edifying programs is critical if the general public and responsible authorities are to comprehend and appreciate the significance of effectively developing afforestation ventures in Zimbabwe. These findings imply that imparting knowledge and skills is

critical to the development of effective methods of developing afforestation as an as an alternative land use for development in Zimbabwe. These findings indicate that knowledge and skills are critical pillars of development effective strategies to develop sustainable afforestation in Zimbabwe.

The same sentiments are shared by the U.N. Food and Agriculture Organization (FAO) (2018) which states that worldwide there are deficiencies in the way that forest-related issues are taught, and environmental education is generally inadequate and insufficient. In the ever-changing world, education aims to satisfy the needs for information, professional knowledge and expertise for as many social groups as possible and as quickly as possible. The essence of education and training in promoting afforestation is also echoed by Ajulor (2018) who opined that only a well-educated and informed society is able to produce policy-makers who regard harmony between people and forests as a priority for sustainable development. The scholar went on to say that in this respect, best practices may be found in a number of countries that give high priority to their extension services, using them as tools to improve public relations in the forest sector.By prioritizing education and training in their forest policies, governments have seen great success with their forest reforms, according to a close study of the existing research. An excellent illustration of this is the experience of the Baltic nations (Latvia, Estonia). Large-scale training initiatives were put into place at the beginning of the 1990s, and it was via these initiatives that they were able to make the forest industry significantly more profitable by basing its operations on sustainable forest management principles. Institutional reforms in forest management are being followed by substantial training programmes. As a result of the study's findings, it is possible to draw the conclusion that, in all nations aiming to ensure sustainable forest management, great priority should be given to forest research, teaching, and training.

9.5 Improve on funding for both afforestors and organizations involved in afforestation

Funding provision was highlighted as one of the institutional building blocks that maybe adopted to promote sustainable afforestation as an alternative land use for development in Mashonaland West. Narratives below are illustrative of the centrality of funding in promoting afforestation as an on-farm economic activity in Zimbabwe:

> *Access to funding is critical for farmers here in Chitomborwizi. This is because most of our farmers cannot afford the cost incurred on the land preparation and transplanting stage.* ***(Farmer)***

General findings points towards the need for financial support to stimulate the uptake of afforestation among farmers. Evidence from the study points out financial in-capacitation as most afforestors and potential afforestors are suffering from inadequate financial muscle to undertake afforestation initiatives. FAO (2017) highlighted that forestry projects require high rates of financing at the beginning, forests take some time to deliver revenues and benefits. Hence investors face high initial costs and delayed returns, which demands the availability of initial investment capital and the ability to wait for revenues (FAO, 2017). Financial challenges have meant that responsible authorities lack the finances to hire or train experts in the field of afforestation, provide funding to afforestors. Generally, farmers felt the costs of afforestation were far much higher than their traditional crops such as maize and soya beans. Generally, respondents felt that in order for farmers to adopt afforestation as an on-farm economic activity, there is need to improve on funding.

9.6 Enhanced market access

Farmers generally felt that, as government they should create a market for their afforestation initiative. These sentiments can be acclaimed from the views captured below:

> *The government, through local leadership should aid in creating markets for timber and timber products in the short run. If they fail to do so, no matter how much, the afforestation gospel is preached, very few if any new entrances will be realised. It will continue as a role of schools in rural areas, of which most schools put up non-commercial." woodlots, only a few trees for shade and that is not viable for curbing climate change issues.**(Tihan, Farmer/Afforestor, Chief)***

The above sentiments reveal that, for afforestation initiatives to be successfully implemented in a manner that will yield positive benefits to economic development in Zimbabwe, there is need for the creation of markets for afforestation products. In the drive to create markets, responsible authorities should put up policy frameworks that attracts investment into an area, especially with special focus on value addition investment in afforestation. Additionally, overregulation often restricts market access for farmer grown tree products, partly due to rules intended to curb illegal logging from natural forests or government plantations (Henman, Hamburg & Vega, 2008). Thus, it is evident from these findings that creation of markerts for afforestation products should be vital cog in the development of an institutional framework to promote afforestation as a sustainable land use option for economic development in Zimbabwe.

9.7 Engaging other organizations

Evidence from the study illustrate that one method that can also be used to promote sustainable afforestation as an alternative land use for development in Zimbabwe is that of engaging other organizations to come on board. Such sentiments can seen in one of the narratives presented below:

> *What is of great importance to increase the number of forestry promoters. Alternatively we can make use of our sister board, Agritex which has representation at ward level. What will then be required is capacitating them and ensure that they have thorough knowledge on afforestation **(Forestry Extension Officer).***

Generally, it can be said from the findings that existing working arrangements between the Forestry Commission and other organizations that are into afforestation are not bearing fruits. There is need to transfer some of the Forestry Commission's powers to these organizations in order for them to effectively contribute towards promoting afforestation as a sustainable land use option for economic development. There is need to streamline organizations that are into afforestation. Such an exercise would provide for systematic operations to be implemented. Research findings indicate that the business of afforestation in Zimbabwe require clear processes and systems for informed functionality. Thus there is need for collaborative effort among all stakeholders to ensure the effective adoption of afforestation as an on-farm sustainable economic activity.

9.8 Incentivising afforestation

Incentivisation of afforestation was isolated as a mechanism for promoting sustainable afforestation as an alternative land use for development in Mashonaland West. Such sentiments are embodied in the following narratives:

Need to come up with a mode that will incentivize farmer. (Extension officer).

We as well need carbon point as is taking place in the international space. The carbon points may not be enough to cover the total cost of forest production, but they at least assure the farmer of some revenue before harvesting of woodlots, which comes in ten years. ***(Bruce, Operations Director/Conservation and Extensions).***

A close look at the sentiments shared above demonstrates that there is limited incentives in venturing into afforestation. Generally, this may explain the limited uptake of afforestation as an on-farm economic activity in Zimbabwe. the synthesis of respondent narratives, generally the majority felt that direct incentives may include cash incentives. Incentives can come in the form of carbon points which the farmer raises depending with the net contribution of their woodlot to carbon sequestering. Further farmers who turn part of their arable land into forests should as well get direct cash benefits from the government. This would encourage farmers to take afforestation as a sustainable land-use not only suitable for degraded land spaces. Further, given the number of seedlings needed by one to start a commercial woodlot, there can also be need for the government to subsidies some of the inputs, starting from free or subsidised nursery, land preparation to subsidised fertilisers. Insights from the above sentiments reveal that, there should be some tangible incentives, if biodiversity conservation policy makers are to motivate farmers to take up afforestation as a sustainable, alternative land-use for economic development. Incentives given to farmers should be linked to reducing the burden of the initial outlay needed in setting up a new forest such as cost of seedling and land preparation cost. Concerns for incentives amongst afforestors have also been raised in literature. From the sentiments above, it is also evident that, it is not only a matter of incentive provision, but information on the available provisions and how one would qualify for such should be disseminated to the intended beneficiaries.

10. CONCLUSION

The study highlighted a number of challenges that are hindering the growth of afforestation initiatives among them being limited marketers, poor extension services among other challenges. Dealing with these challenges is pivotal to meeting policy targets for adoption of afforestation as an alternative land use for economic development. Despite the existence of these challenges, a number of strategies were isolated that can be used realise the potential of afforestation as a as an alternative land use option for development in Zimbabwe. Some of the strategies isolated include incentivising afforestation, research and development, value addition, policy reforms, enhanced market access, education and training, improved extension services among other such strategies.

11. AREAS FOR FURTHER RESEARCH

Despite the perceived value of afforestation across the globe,the conversion of land from agriculture to remains low in most developing countries, Zimbabwe included.Zimbabwe has vast pieces of land with potential for afforestation initiatives which remain underutilised and untapped. There is need for studies to unearth the underlying reasons for the limited uptake of afforestation among farmers.

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