UNIVERSITY OF KWAZULU-NATAL

Wood Chip Exports and the Challenges faced by Private Pulpwood Farmers in Southern KwaZulu-Natal

By

Lenny Naidoo

209510013

A dissertation submitted in partial fulfillment of the requirements for the degree of

Master of Business Administration

Graduate School of Business and Leadership

College of Law and Management Studies

Supervisor: Dr Mihalis Chasomeris

2011

DECLARATION

I, Lenny Naidoo declare that:

(i) The research reported in this dissertation, except where otherwise indicated, is my original research.

(ii) This dissertation has not been submitted for any degree or examination at any other university.

(iii) This dissertation does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.

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Date: 11 November 2011

ACKNOWLEDGEMENTS

I wish to express my sincere appreciation and gratitude to the following individuals, without whose assistance, this study would not have been possible.

- My praises go Sri Sathya Sai Baba for the spiritual guidance.
- I would like to express my appreciation to my supervisor Dr. Mihalis Chasomeris for his brilliant tutorship, guidance and encouragement throughout this study.
- I thank my wife Bonnie whom gave me the greatest opportunity to follow my desire to study. I dedicate this entire degree to her, for the immeasurable support and sharing in the anxiety that study brings. Thank you for parenting the children with little assistance from me.
- My sons, Thivian who turned 18 this year and Sershin who turned 14, were forced into making sacrifices during the study. Thank you for your understanding and continued support.
- Mr. Graham Burnett and the Directors of NCT Durban Wood Chips (Pty) Ltd for the financial assistance and encouragement throughout the MBA programme.
- The management of NCT Forestry Co-operative Limited for affording me the opportunity to conduct this study and to the respondents for answering the questionnaire.
- Mr. Rob Thompson for all your support and assistance throughout this study.
- My MBA team, Michael Biyase, Shireen Siva Subramonian, Sachin Suknunan and Jake John for their continuous support throughout the MBA programme.

ABSTRACT

The South African forestry industry has contributed significantly to the economic growth of the country by the planting of trees and the processing of these trees for the export market. With the increased demand for wood chips, the wood chip industry is concerned that the plantation resource that is currently available may not be adequate to fulfil the production required for future wood chip export.

The purpose of this study is to examine the trends in wood chips exports from the Port of Durban and to examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal. The forestry pulp and paper sector and its related downstream manufacturing enterprises is an important part of the KwaZulu-Natal economy. Eucalyptus and wattle timber are used to manufacture pulp and are exported in the form of wood chips. The Durban Wood Chipping facility is aimed at the export of wood chips from Durban to pulp and paper manufacturers in Japan.

The methodology used in this study included questionnaires and semi-structured interviews that were held with the respondents involved in the forestry industry. A questionnaire was sent electronically to 119 participants being the total population of timber farmers that supply NCT Durban Wood Chips. A total of 33 respondents completed the questionnaire resulting in a 27.73% response rate. Three key personnel, with a strong forestry background, belonging to NCT Forestry Co-operative limited were selected as participants for the qualitative aspect of the study.

The findings of the study showed that wood chips exports have increased from the Durban facility between 2006 and 2011. This came from recent research literature as well as data from NCT Durban Wood Chips (PTY) LTD. Dominant challenges faced by the farmers were land reform, transportation costs and municipal rates. Land claims, road infrastructure, economics (cost vs income) and demand for timber were the most challenging factors affecting private timber production into the future. The qualitative and quantitative results confirm that timber production is definitely increasing and hence contributing to stability of private pulpwood production in Southern KwaZulu-Natal.

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LIST OF ABBREVIATIONS

ANC	African National Congress
BDT	Bone Dry Ton
CTC	Central Timber Co-operative
DWC	Durban Wood Chip
FSA	Forestry South Africa
GDP	Gross Domestic Product
JPT	Joint Planning System
JPY	Japanese Yen
MDP	Mill Delivered Price
MRI	Mean Ring Index
NCT	NCT Forestry Co-operative Limited
RTMS	Road Traffic Management System
SA	South Africa
SATGA	South African Timber Growers Association
SLAG	Settlement Land Acquisition Grant
SOE	State Owned Enterprise
TNPA	Transnet National Ports Authority
USD	United States Dollars
ZAR	South African Rand

CHAPTER 1

Introduction

1.1 Background and Context

The South African forestry industry has contributed significantly to the economic growth of the country by the planting of trees and the processing of these trees for the export market. With the increased demand for wood chips, the wood chip industry is concerned that the plantation resource that is currently available may not be adequate to fulfil the production required for future wood chip export. In South Africa (SA), the forestry sector contributes to the economy and the employment of people and the improvement of their livelihoods. According to Joemat-Petterson (2009), the country is now beginning to experience a shortage of timber which has a direct effect on the sustainability of local sawmilling, pulp and paper operations and threatens employment opportunities and the local economy. This shortage will result in SA not being able to meet its domestic demand for timber from the existing growing stock. The economy will be affected through increased prices and the lack of timber products to meet domestic demand.

1.2 Problem Statement and Research Objectives

In order for SA to remain self-sufficient in timber export and to meet future demand, extensive expansion to the existing timber plantations is required (Joemat-Pettersson, 2009). The expansions in the plantation areas would contribute to the economy by creating new jobs and increase foreign exchange earnings. According to Taylor (2009), land reform, access to funding and skills shortage are the challenges and constraints that have affected the forestry sector and prevented this sector from realizing its full potential as well as contribution to sustainable development. To manage and address these challenges, it is imperative that the timber industry understand and address the impact of these challenges.

The following specific objectives therefore have been identified for the study.

- To examine the trends in wood chips exports from the Port of Durban.

- To examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal.

The stakeholders who will benefit will include Industrial forestry and its contribution to the economy. Earnings from the timber industry in South Africa have generally faced decline recently whereas the Industrial Timber Plantation sector is growing and expanding into new markets and new products. According to Timberwatch (2009), the increased demand for wood chips has caused concerns that the plantation resource that is currently available is approximately 1.37 million hectares and may not be adequate to fulfil the production required for future wood chip export. This study is aimed at providing the timber industry further insights on the diminishing forest resources and limitations. Unless the timber industry responds to the challenges faced by the industry, the production of timber will be affected due to the fact that vast amounts of land available for tree plantation are currently unplanted. The estimation is that approximately 73 000 hectares of land that is currently used for tree plantation will not be replanted productively and will be used for other activities like grazing or crop planting (Department of Agriculture, Forestry and Fisheries, 2009). Hence the major stakeholders in this respect will be timber farmers and their employees. Furthermore, private timber farmers will benefit from the increased productivity which will also contribute towards the upliftment of the local economy due to increased employment.

1.3 Study Methodology

For the purposes of this study, the instruments used include the questionnaires and semi-structured interviews that were held with the respondents involved in the forestry industry. A questionnaire was sent electronically to 119 participants being the total population of timber farmers that supply NCT Durban Wood Chips. All these timber farmers were members of the NCT Forestry Co-operative limited. A total of 33

respondents completed the questionnaire resulting in a 27.73% response rate. The questions were designed in line with answering the research questions of the study and meeting the objectives. The majority of the questions were close-ended but some were open-ended to allow further feedback from the respondents. A 5 point Likert scale was used for most close-ended questions. The questionnaires were administered via QuestionPro, an online analytic tool designed for research purposes which allows for the construction of questionnaires that can be sent online to the relevant respondents. QuestionPro also allows for data analysis and presents various methods of analysing data. The data collected was collated and stored on QuestionPro itself. This data was then exported to Microsoft Excel where a further and detailed analysis was done on the data. Three participants for the qualitative aspect of the study were selected. These respondents are employed by NCT Forestry Co-operative Limited and included the Group General Manager, the Group Logistics Manager and the Group Assistant General Manager. These key personnel had a strong forestry background and were therefore selected.

1.4 Overview of the Study

The study was undertaken in a manner that allowed for a clear understanding of the problem, a review of the literature, a description of the methodology used, presentation of the data, discussion of the data and concluding recommendations and comments.

The structure of the study is presented in six chapters as follows:

- Chapter 1 introduces the research problem, explains the background of the study, outlines the research methodology that was used, outlines the research questions to be answered and informs on the limitations of the study.

- Chapter 2 focuses on the literature review. In this chapter an overview of the timber industry is outlined. This chapter also outlines the trend of wood chip exports from the Port of Durban and the challenges face by private pulpwood farmers.

- Chapter 3 describes the research methodology and data collection techniques used in the study.

- Chapter 4 focuses on the presentation and discussion of data that was gathered from the respondents that participated in the study through answering the electronic questionnaire using QuestionPro.

- Chapter 5 analyses and discusses the interviews that were conducted.

- Chapter 6 is the concluding chapter and offers recommendations for future studies that aim to contribute to the stability and growth of private pulpwood production in Southern KwaZulu-Natal.

1.5 Limitations of the Study

Due to confidentiality of member's details the questionnaire had to be forwarded to the respondents electronically via NCT Forestry Co-operative Limited. This is a limitation in that there was no direct contact (face to face) with the respondents and therefore no personal touch. Another limitation is the low participation rate. Due to the nature of the research the respondents have been allowed the choice not to participate in the research and to discontinue with the questionnaire at any time. This has resulted in a reduced response rate. A total of 44 participants started the questionnaire and 11 participants have not completed the questionnaire. This resulted in just 33 questionnaires being completed. Although the survey was carried out by electronic medium using QuestionPro, an online questionnaire, a limitation is the questionnaire method in itself. Some users are not familiar with the use of Questionpro, and some did not have access to the internet to respond to the questionnaire request, even though they received the electronic mail request.

1.6 Conclusion

This chapter provides a detailed introduction and background to the Wood Chip Exports and the challenges faced by Private Pulpwood farmers in Southern KwaZulu-Natal. The forestry industry of South Africa contributes to the economic growth of the country. Trees are planted and processed for the wood chip industry. In recent years the demand for wood chips from South Africa has increased considerably. Wood chips from the Port of Durban is exported to Japan for the pulp and paper industry by NCT Durban Wood Chips (Pty) Ltd. Due to the increase in the demand for wood chips there is a concern that the resource available may not be adequate to fulfil the production required for future wood chip export.

The first research objective was to examine the trends in wood chips exports from the Port of Durban. The second research objective was to examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal. A questionnaire was sent electronically to 119 participants being the total population. 33 respondents completed the questionnaires resulting in a 27.73% response rate. The questionnaires were administered via QuestionPro, an online analytic tool designed for research purposes which allows for the construction of questionnaires that can be sent online to the relevant respondents.

Three participants were selected for the qualitative aspect of the study. These respondents are employed at NCT Forestry Co-operative Limited and included the group General Manager, the Group Logistics Manager and the Group Assistant General Manager. These key personnel had a strong forestry background and were therefore selected.

Chapter two presents a detailed literature review on Wood Chip Exports and the Challenges faced by Private Pulpwood Farmers in Southern KwaZulu-Natal.

CHAPTER 2

Literature Review on Wood Chip Exports from the Port of Durban and the Challenges faced by Private Pulpwood Farmers in Southern KwaZulu-Natal

2.1. Introduction

Chapter two presents the literature review that was undertaken for this study. In order to understand wood chip exports and the challenges faced by private pulpwood farmers it was fundamentally significant to embark on a literature review on the topic and related concepts. This chapter therefore provides a literature review that briefly investigates the forestry industry in South Africa, the trends in wood chip exports from the Port of Durban and the challenges faced by private pulpwood farmers in Southern KwaZulu-Natal.

2.2. The South African Forestry Industry

In South Africa, trees are planted by farmers on their farms for commercial purposes. This is known as commercial plantation forestry. Due to the increase in demand from the construction and mining industry and the pulp and paper industry it was necessary for these plantations to be established. The timber (round wood) is processed as raw materials by the pulp and paper mills, sawmills and the construction industries. In a variety of industries, round wood is the most essential raw material. Additional value is added to the round wood by the mining, paper, pulp, furniture and energy production. In the pulp and paper industry wood fibre is the most preferred raw material.

According to the Department of Agriculture, Forestry and Fisheries (2009), significant contribution has been made by the South African forestry industry towards economic growth by the planting and processing of trees for the export market. The plantation resource available is approximately 1.37 million hectares. The demand for wood chips has increased resulting in the wood chip industry being concerned that the

available plantation resource may not be sufficient to execute the production necessary for future wood chip export. Forest resources are declining and vast amounts of land remain unplanted which is available for the planting of trees. Due to these factors the production of round wood would be affected. According to the Department of Agriculture, Forestry and Fisheries (2009), 73 000 hectares of land used by tree plantations will not be replanted productively and used for other activities like grazing or crop planting. Plantation fires are another factor that affects forestry destroying large plantations.

According to Arnold (1998), across the world the forest industry is highly dependent on small farmers for their wood fibre. As pointed out by Arnold (1998), the SA forestry industry is highly dominated by a small number of large corporates like Sappi, Mondi and Central Timber Co-operative (CTC). Although the SA forestry industry is dominated by these big corporates, a significant share of the planted area has always been accounted for by small growers who are affiliated to NCT Forestry. NCT Forestry offers an added advantage to these small growers as the small growers are assured of the market for their products and have access to technical services. Although these private pulpwood farmers are assured of the market for their products, they are faced with challenges and the question remains whether they can still sustain the wood chip export market.

2.2.1 History of NCT Forestry Co-operative Limited

The Natal Co-operative Timber Company (NCT) was registered in February 1949. The name was changed to NCT Forestry Cooperative Limited. According to Cairns (2000), the co-operative's foremost purpose was to discover a market for wattle timber. Initially the NCT members held 8000 hectares, mostly planting wattle. The membership of soft and hardwoods grew to more than 200 000 hectares by the year 2000. According to Farrow and Ferguson (1999), wattle bark quotas were introduced in 1963. These quotas amplified the need to make use of the timber. A number of shipments of timber were made to Italy over the next two years and two pack mills were established by NCT at Kranskop and Dalton to promote mining timber (Farrow

& Ferguson, 1999). According to Arnold (1994) a disagreement involving timber pricing had developed in the South African Timber Growers Association (SATGA) in the late sixties. It was claimed that the large processors used their position as major producers to keep the wood price low. “The chairman of SATGA had declared that in the future, private growers would have to protect and promote their interests through their respective co-operatives” (Arnold, 1994). Central Timber Co-operative (CTC) was registered in 1970 and initiated negotiations with a Japanese buyer (Sumitomo Shoji Kaisha Corporation) to supply 250 000 tons of wattle chips per year for a period of ten years (Cairns, 2000). Even though the wood chip plant was relocated to Richard’s Bay in 1979, Wattle timber was continuously exported through the Port of Durban by NCT on an unplanned basis in anticipation of the encouraging supply contract for hardwoods which then reduced the need for NCT to export logs.

2.2.2 The Role of NCT Forestry Co-operative Limited in the Forestry Industry

NCT Forestry is a co-operative that markets timber for the private and independent timber farmers. According to KZN Top Business (2011), NCT Forestry is recognised internationally as the largest forestry marketing organisation in southern Africa and a quality supplier of round wood timber and hardwood pulp wood chips. The province of KwaZulu-Natal is the core area that NCT’s management and operation covers. According to the Pulp and Paper Sector Summit Research Book (Naledi, 2005), NCT acts as agent for members and processors and negotiates prices on behalf of its members. A range of services are offered by NCT forestry to its members including, timber transport coordination, accounts and technical forest advice and timber order allocations. Members of NCT Forestry also qualify for bonuses based on their patronage and committed supply, depending on available financial reserves.

Members of NCT Forestry Co-operative share in the profits of the co-operative and own the co-operative (KZN Top Business, 2011). These members of the co-operative represent 21% of afforested land (this is land converted into forests for commercial purposes) in South Africa (Naledi, 2005). Eucalyptus and Wattle timber is exported in the form of woodchip through CTC and Shincel previously and now through its new facility in Durban, called NCT Durban Wood Chips.

In contrast to other commercial timber producers, NCT does not own its timber resource. The resource is owned by the private timber growers in the country who have elected to become members of NCT. This creates pressure on NCT in terms of meeting market requirements. Traditional commercial suppliers, like Sappi and Mondi on the other hand have more control over their resource as they own their plantations, subsequently they also control the harvesting and therefore the availability of timber for supply. On the other hand, NCT can calculate the technical availability of timber from its members but do not control the harvesting of the timber. The result is that what is technically available as a resource does not always materialise in practice (Perry, 2006).

2.2.3 Overview of the Forestry Industry in South Africa

In order to obtain an overview of the industry the relevant information has been selected and is presented in graphical format for easy reference. The information and graphs are courtesy of Forestry South Africa's Roger Godsmark (2010). Forestry South Africa (FSA) is an Association which represents the interests of its members in particular and the promotion and wellbeing of the South African commercial Forestry Industry in general. Although voluntary in its nature, FSA's membership includes all 9 corporate timber companies operating in South Africa, 1 300 commercial timber farmers and 20 000 emergent black timber growers. This membership represents over 90% of the Industry as a whole and virtually all the private sector involved in the Industry. Due to this representivity, FSA is viewed by both Government and the Private Sector as the body which represents the South African Forestry Industry (Godsmark, 2010).

Figure 2.1 represents the land use in South Africa. Forestry represents only 1% of the land usage. Majority of the land is used for grazing.

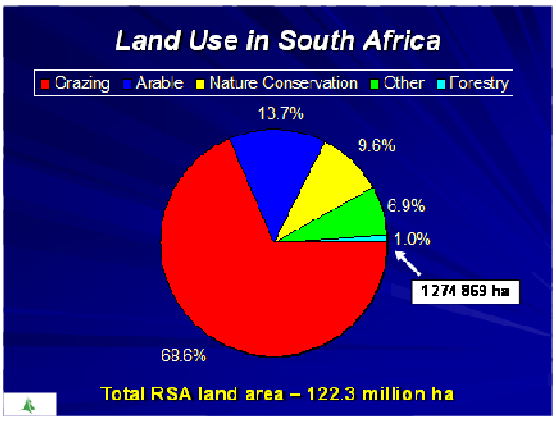

Figure 2.1 Land use in South Africa
Source: Godsmark, 2010.

Figure 2.2 represents the land use in KwaZulu-Natal. Only 5.5 % of the land is used for Forestry which is approximately 504 393 hectares.

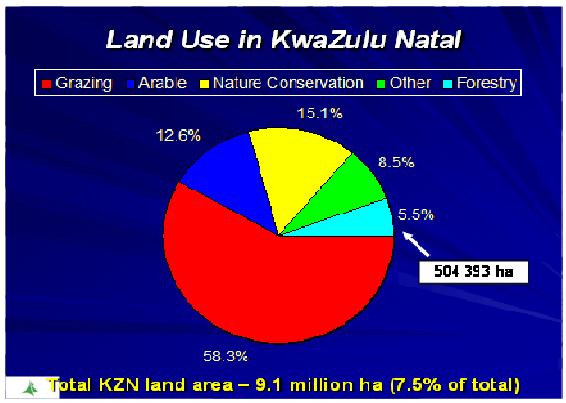

Figure 2.2 Land use in KwaZulu-Natal
Source: Godsmark, 2010.

Figure 2.3 indicates the plantation area in South Africa. Mpumalanga has the largest area with 6.35%. KwaZulu-Natal has the second largest plantation area with 5.51%.

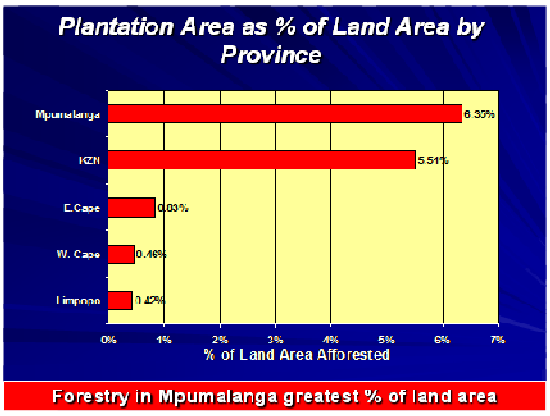

Figure 2.3 Plantation Area by Province
Source: Godsmark, 2010.

Figure 2.4 shows the comparison of land use between 1999 and 2009. There is a 9.1% reduction in Forestry Area.

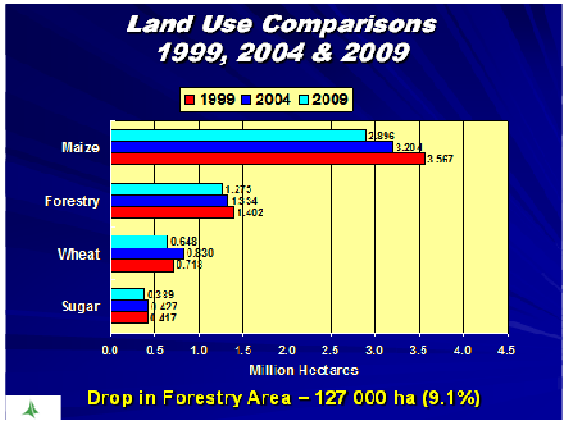

Figure 2.4 Land use Comparisons
Source: Godsmark, 2010.

Figure 2.5 illustrates the comparisons of land usage for Forestry between other countries. South Africa has the least usage at 1.275 million hectares.

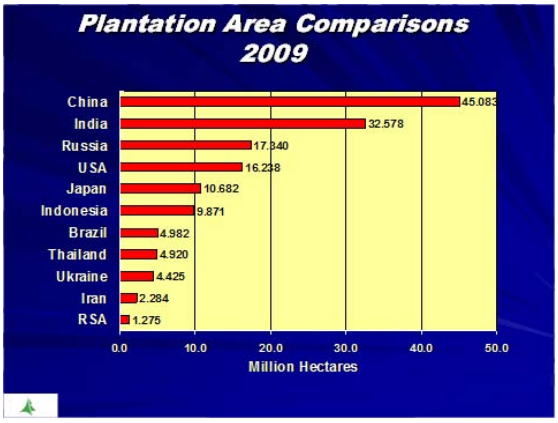

Figure 2.5 Plantation Area Comparison by Country

Source: Godsmark, 2010.

Figure 2.7 shows that 69.30% of plantations are owned by private companies. NCT's membership base comprises of private timber growers from the 20.30 % privately owned timber areas and various municipalities.

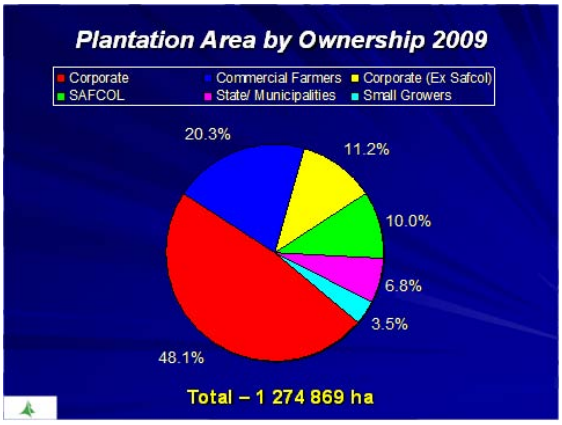

Figure 2.7 Plantation Area by Ownership

Source: Godsmark, 2010.

Figure 2.6 shows that roughly half of the area under plantation is planted to pine (softwood) and the remaining half to Eucalyptus and Wattle (hardwood). Eucalyptus makes up 40.40% of the area compared to 8.20% wattle.

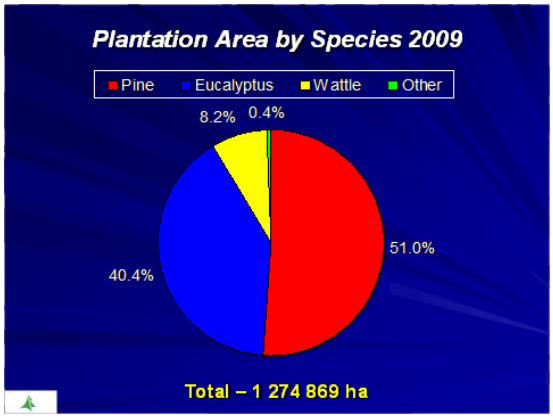

Figure 2.6 Plantation Area by Species

Source: Godsmark, 2010.

Figure 2.8 reflects that the province of KwaZulu-Natal has the 2nd largest plantation area of 39.60%

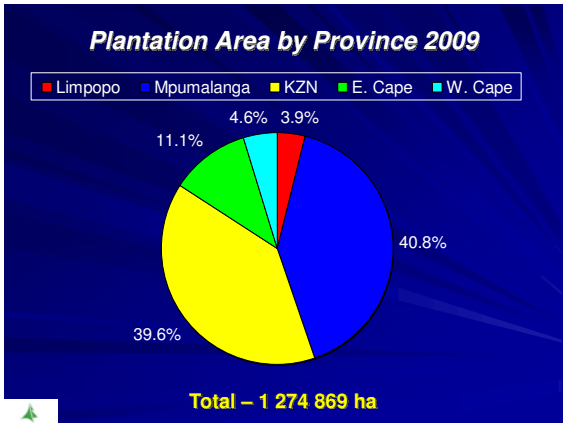

Figure 2.8 Plantation Area by Province

Source: Godsmark, 2010.

2.2.4 Background to the Wood Chip Industry in KwaZulu-Natal

NCT Forestry is a marketing co-operative representing more than 2000 members who own in excess of 300 000 hectares of plantations from which the woodchips are produced (Reitz, 2010). NCT Forestry is the biggest single entity supplier of woodchips to Japan and owns 100 percent of the equity in the three woodchip export entities. Two of these wood chip mills are situated in Richards Bay and one in Durban. In 2009, around 75% of the woodchips exported from South Africa originated from independent and non-corporate tree farmers. 68% came from NCT Forestry Co-operative's 2000 members, more than 25% of whom are small-scale Black growers who farm on tribal land in Zululand and in the KwaZulu-Natal midlands. In addition to this figure, a significant quantity of timber also comes from farms that have recently become owned by Black communities as a result of the government's land restitution programme. The forestry industry in KwaZulu-Natal alone contributes approximately R6 billion (or 10.7%) p.a. to the KwaZulu-Natal GDP through forest products and is one of the province's largest employers (Reitz, 2010). NCT Forestry currently exports approximately 1.5 million metric ton of wood chips out of Richards Bay and Durban per annum. The export value is calculated at approximately USD 190 million (Reitz, 2010).

2.2.5 Woodchip Exports as Expansion Strategy

Due to large capital requirements by the pulp and paper mills, timber plantations (wood resources) are first established, thereafter chipped for export. According to Chamberlain, Essop, Hougaard, Malherbe and Walker (2005), this allows the timber plantations to grow to adequate magnitude before the investment intensive beneficiation plants such as pulp mills are constructed. This is quite evident that NCT Forestry whom developed the local chipping mills and has completed a feasibility study to construct a pulp mill in Richards Bay (Pulp United). The strategy NCT used was first to establish the chipping plants. Higher returns were secured through these chipping plants for the wood fibre produced by members. This strategy (wood chip exports) was also used by Mondi to accumulate plantation stocks until capacity at their mills could be increased (Chamberlain et al., 2005). Prior to the exportation of

wood chips, the pulp and paper mills were the only buyers of fibre from hard wood. Due to this the pulp and paper mills could dictate the pricing for the additional fibre required as they owned a substantial amount of plantations.

2.2.6 The Role of the Timber Industry and its Contribution to the SA Economy

According to the Accelerated and Shared Growth Initiative for South Africa (Asgi-SA), Forestry play an important role in the economy and the Forestry sector is identified as a key growth area (Agriseta, 2010). The forestry sector in South Africa ranks amongst the leading export industries. This sector contributes 2% to the country's Gross Domestic Product (GDP).

According to KZN Top Business (2011), forestry is a rural activity and many of the poorest people live in these areas. The timber industry's future growth lies with small-scale growers in predominantly rural communities. KwaZulu-Natal and the Eastern Cape provinces have been identified as key areas for forestry development for the wood and paper sector. The production of timber by timber farmers accounts for 6.5% of KZN's agricultural output (Trade and Investment KwaZulu-Natal, 2010). Trade and Investment KwaZulu-Natal (TIKZN) (2010) reported that the forestry and paper industry had seen a huge inflow of R2.7 billion of foreign direct investment into the KwaZulu-Natal.

Pogue (2010) is of the view that wood chipping is a component of the pulping operations and at all pulp and paper mills there are integrated softwood and hardwood chipping facilities. However the South African wood chip market is an independent entity and only uses hardwood. The wood chip industry has an export focus and the demand for wood chips is strongly related to the exchange rate, that is, the relative strength or weakness of the Rand (Pogue, 2008).

According to Takaendesa, Tsheole and Aziakpono (2005), South Africa has had a steady fall of her exchange rate to the lowest levels in December 2001 and a sharp appreciation thereafter against the US Dollar. High export growth is needed by South Africa in an atmosphere of freely floating exchange rates and increased volatility of

the Rand calls for an understanding of the effect of this highly fluctuating Rand on South Africa's exports and consequently, its impact on the economy. According to Bah and Amusa (2003), developed countries pay more attention to the impact of the foreign exchange rate volatility than developing countries. The effects of the volatility on exports were examined by Bah and Amusa (2003) for the period 1990 to 2000 and they found that the volatility of the Rand's real exchange rate exerts a significant and negative effect on exports. Internationally wood chips are sold in US Dollars (USD) on a Bone Dry Ton (BDT) basis.

Figure 2.9 illustrates the USD - ZAR exchange rates from 2002 to 2010. This shows the strengthening of the ZAR against the USD. NCT Forestry Co-operative led the South African price increase negotiations with Japan in 2010 and was able to negotiate export price increases, resulting in the increase in the price paid to the farmers for their timber delivered to the wood chip mills (Kime, 2010).

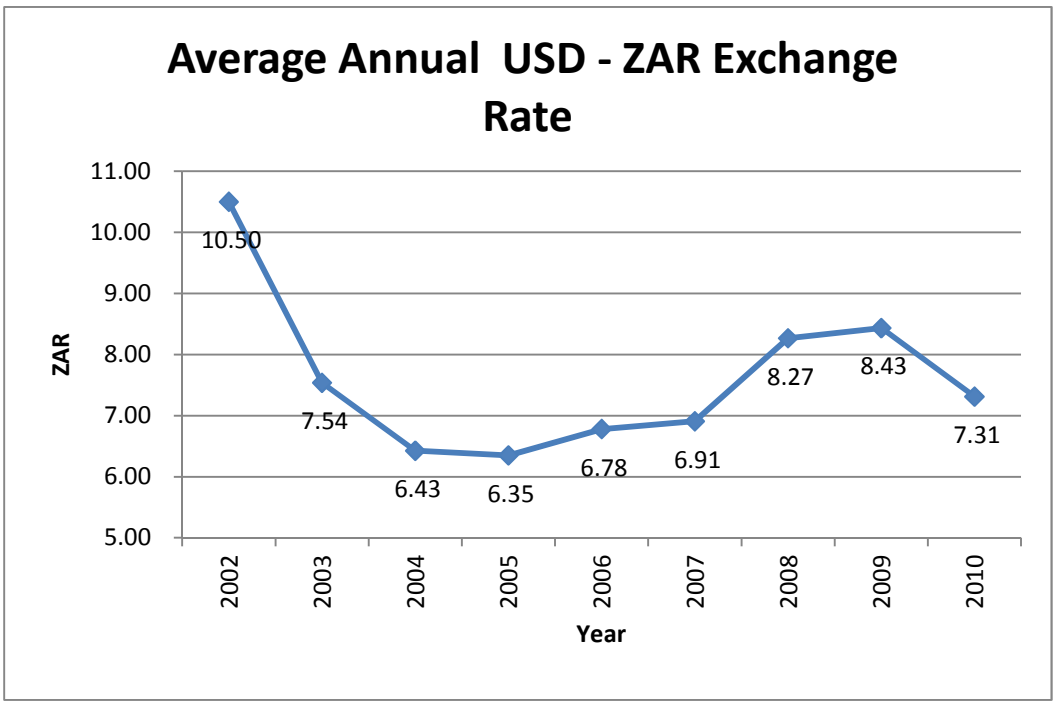

Figure 2.9 Average Annual USD – ZAR Exchange Rate
Source: ABSA Capital, 2011.

Figure 2.10 illustrates the USD – JPY exchange rates from 2002 to 2010. This shows the strengthening of the Japanese Yen against the USD in 2008, 2009 and

2010. Due to the strong Japanese yen against the US Dollar the Japanese companies pay less Yen for the wood chips in 2010 than in 2002.

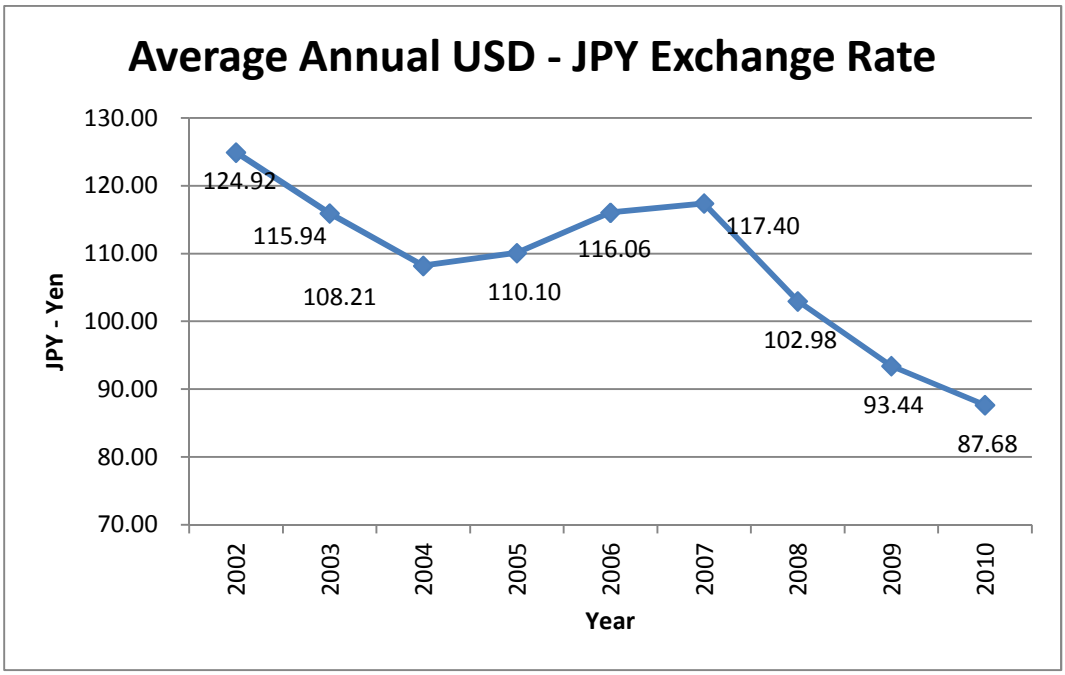

Figure 2.10 Average Annual USD – JPY Exchange Rate
Source: ABSA Capital, 2011.

2.2.7 Timber Shortage in the Country

According to During and Whales (2009), five regions contain high concentrations of timber plantations: Southern KwaZulu-Natal, Midlands, Northern KwaZulu-Natal, Zululand and Maputaland. 38.50% of the land in the province of KwaZulu-Natal (half a million hectares) is allocated to timber plantations. During and Whales (2009) also report that 70% of this lands allocated timber plantations is devoted to hardwoods of which Eucalyptus and Wattle is the major specie. 30% of the land is devoted to Pine. In South Africa pine is the only softwood that is grown in large quantities.

Thompson (2008) is of the view that the planting of new areas is hampered by the timber permit restrictions. In 2006 the industry planted just under 3 000 new hectares as compared to the 1980's when approximately 20 000 hectares were planted. Timber plantations being converted for alternative land use is approximately 3 000

ha per annum, leading to minimal growth in nett planted area gained (Thompson, 2008). Joemat-Pettersson (2009) reported that there had been several studies of the last few years that confirmed that the country is now beginning to experience a shortage of timber and can be expected to affect government's intentions to achieve a 6% economic growth rate. The Forestry Roadmap 2030 (2009) reported that the effects of a shortage of timber is already evident in some parts of the country. This is having an unfavourable effect on the sustainability of pulp and paper operations, local sawmilling and poses a threat to employment opportunities and local economies. It is expected that South Africa will not be able to meet its domestic demand for timber from the existing growing stock in the future as reflected in table 2.1. The outcome of this will affect the national economy through increased prices and lack of timber products to meet domestic demand.

Table 2.1 illustrates the demand and supply scenario of timber over a 5 year average. The estimated sustainable supply is 19 million tons while the estimated sustainable demand is 25 million tons. This represents a 23.6% deficit, that is, 23.6% of our demand cannot be met by local supply of timber. Therefore the consequences of this shortage of timber would be to reduce timber exports or to import the shortfall of timber required. There are also risks involved with timber imports that include the introduction of pests and diseases, which may threaten our local forestry industry (Joemat-Pettersson, 2009).

Five Year Period	**Total Supply (tons)**	**Total Demand (tons)**	**(-) Deficit**	**Shortage (Excess Demand) (%)**
2005 – 2009	20,550,761	23,249,214	- 2,698,453	13.1%
2010 – 2014	20,087,199	23,932,910	- 3,845,711	19.1%
2015 – 2019	18,609,931	24,650,053	- 6,040,122	32.5%
2020 – 2024	19,454,356	25,448,516	- 5,994,160	30.8%
2025 – 2029	18,666,332	26,372,899	- 7,706,567	41.3%
2030 – 2034	18,134,701	27,501,409	- 9,366,708	51.7%
Estimated sustainable supply	**19,250,547**	**25,192,500**	**- 5,941,954**	**-23.6%**

Table 2.1 Long Term Demand and Supply Scenario

Source: Forestry South Africa, 2007.

2.2.8 Timber Delivery to NCT Durban Wood Chips Export Facility

Table 2.2 shows the timber delivery to the Durban Wood Chip Export facility on a monthly basis. From this table the Gum deliveries increased by 23.73% in 2010 compared to 2009. The Wattle deliveries however declined by 0.94% in 2010 compared to 2009. The comparison of Total Gum deliveries for the 6 months between March and August reveals that there was a 20.11% increase in deliveries in 2010 from 2009 and a 2.79% increase in 2011 from 2009. The comparison of Total Wattle deliveries for the 6 months between March and August reveals that there was a 78.50% increase in deliveries in 2010 from 2009 and a 97.49% increase in 2011 from 2009.

	GUM			WATTLE		
	2009	2010	2011	2009	2010	2011
Mar	26,144	12,235	16,133	26,576	33,523	31,596
Apr	18,655	14,861	13,412	13,491	33,128	30,684
May	23,492	22,703	18,606	11,826	36,381	39,246
Jun	19,640	31,504	24,773	9,934	20,940	30,880
Jul	18,886	44,828	41,730	10,802	5,673	10,997
Aug	44,919	56,113	41,312	0	0	31
Sep	30,219	31,383		11,864	7,588	
Oct	17,342	27,222		18,451	11,172	
Nov	13,315	23,140		19,540	23,337	
Dec	13,459	10,637		21,990	17,496	
Jan	11,869	11,376		24,321	24,654	
Feb	12,183	10,483		30,566	29,423	
	250,123	**296,485**	**155,966**	**199,361**	**189,238**	**143,434**

Table 2.2 Timber Supply to Durban Wood Chip Facility
Source: NCT Forestry Co-operative Limited, 2011a.

2.3 The Current Export Trends of Wood Chips from Durban

During and Whales (2009) believed that the export market for pulp and paper is strong. The forestry pulp and paper sector and its related downstream manufacturing enterprises is an important part of the KwaZulu-Natal economy. The forest product export sector comprises of solid wood (23.3%), paper (45.2%), and pulp (28.9%) (During & Whales, 2009). The global economic downturn had a big effect on the

forestry and paper industry. Wood sales in South Africa of 14.2 million tons in 2009 were down by 2.3 million tons (or 14%) from 2008. Even though local demand is diminishing, the export market for pulp and paper from South Africa remains strong and this sector contributed about R2 billion to the nation's balance of payments in 2009 (During & Whales, 2009).

According to Chamberlain et al. (2005), the export of wood chips is a contentious market in South Africa. The wood chip market has achieved higher prices for plantation owners by successfully breaking the pricing monopoly of the large pulp plants in South Africa (Chamberlain et al., 2005). The wood chip market's survival has been based on a single international buyer market, Japan. An efficient shipping transport system has been created by Japan which enables them to transport wood chips cost effectively over large distances. Japan sourced wood chips from various countries and is the largest importer of wood chips internationally (Chamberlain et al., 2005).

Eucalyptus and wattle timber are used to manufacture pulp and are exported in the form of wood chips. According to the KwaZulu-Natal Department of Transport (2008), South Africa has four wood chip export facilities, one at the Port of Durban and three in Richards Bay. According to the National Port Authority export statistics for 2006/07, 3,728,948 tons of wood chips were exported through the Port of Richards Bay. The Durban Wood Chipping facility is aimed at the export of wood chips from Durban to pulp and paper manufacturers in Japan. Kime (2009) reported that during the 2009 year the South African Rand (ZAR) has strengthened against the US Dollar ($) by 25%. Consequently, the Japanese wood chip prices decreased by 14% and the volume of wood chips exported to Japan reduced by 40% in 2009 (Kime, 2009).

The wood chip export facility in Durban exported the first wood chips in February 2005 (Keyser, 2011). This export growth is illustrated in Figure 2.11 below. This facility has had steady growth and in the 2009 financial year exported a total of 575 585 tons of wood chips. In 2010, due to the recession, the facility exported 431 876 tons during the financial year. In the financial year ending 2011 the export from the facility was 508 698 ton. According to Kime (2010), the Japanese pulp and paper

industry shrunk by 20% in 2010 compared to 2009 due to the world recession. This, together with the need to reduce the high wood chip stocks in Japan resulted in ship sales volumes being reduced by approximately 30% in 2010 (Kime, 2010). The chairman of NCT Durban Wood Chips (Keyser, 2011), reported that the wood chipping mill reached a milestone in July 2011 when the mill exported it's three millionth tonne of wood chips to Japan during its seventh year of operation.

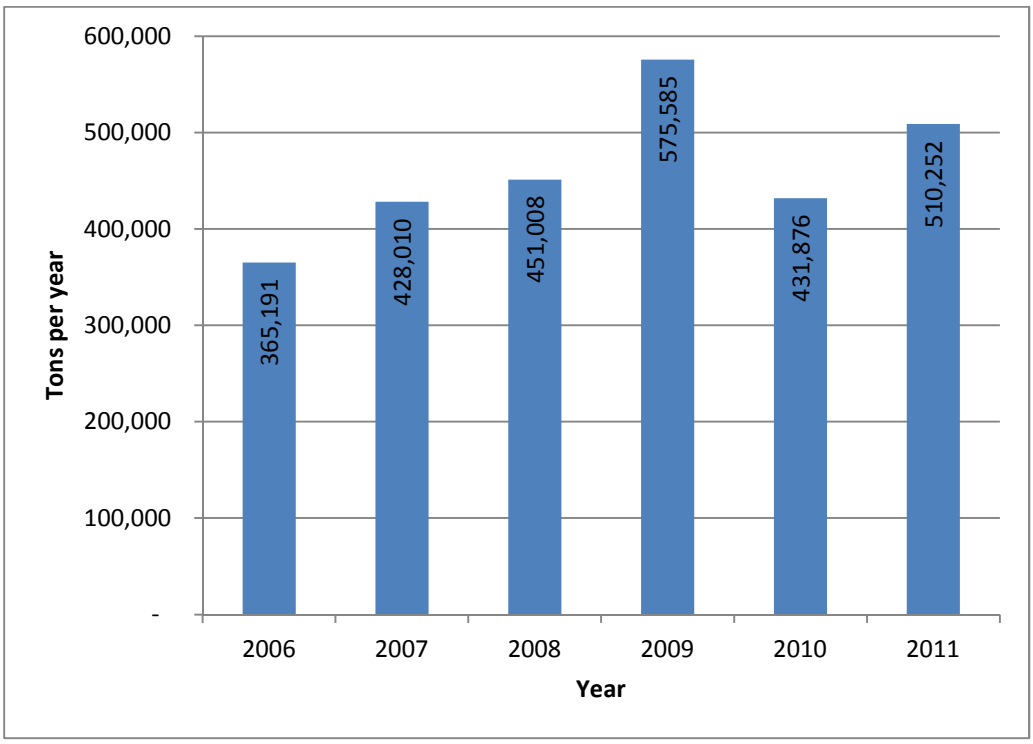

Figure 2.11 Annual Wood Chip Exports from Durban
Source: NCT Durban Wood Chips (Pty) Ltd, 2011.

Wattle and Eucalyptus (Gum) wood chips are exported from the Durban facility. Figure 2.12 shows the breakdown between Wattle and Gum wood chip exports between the years 2006 and 2011 year. The world recession in 2010 and the high stocks of wood chips in Japan necessitated the rationing of orders by NCT to its members to cater for the reduction in wood chips sales (Kime, 2010). The Eucalyptus exports were 80% and Wattle was 20% of the total export. Over the years the export of Wattle increased and in 2009 the total Wattle exported totalled 41.50%. In 2010 Wattle exports were 43.40% and 2011 42.50%. Wattle timber however takes longer to grow than Eucalyptus and is more expensive than

Eucalyptus timber. The Wattle and Eucalyptus data is illustrated in Figure 2.12 below.

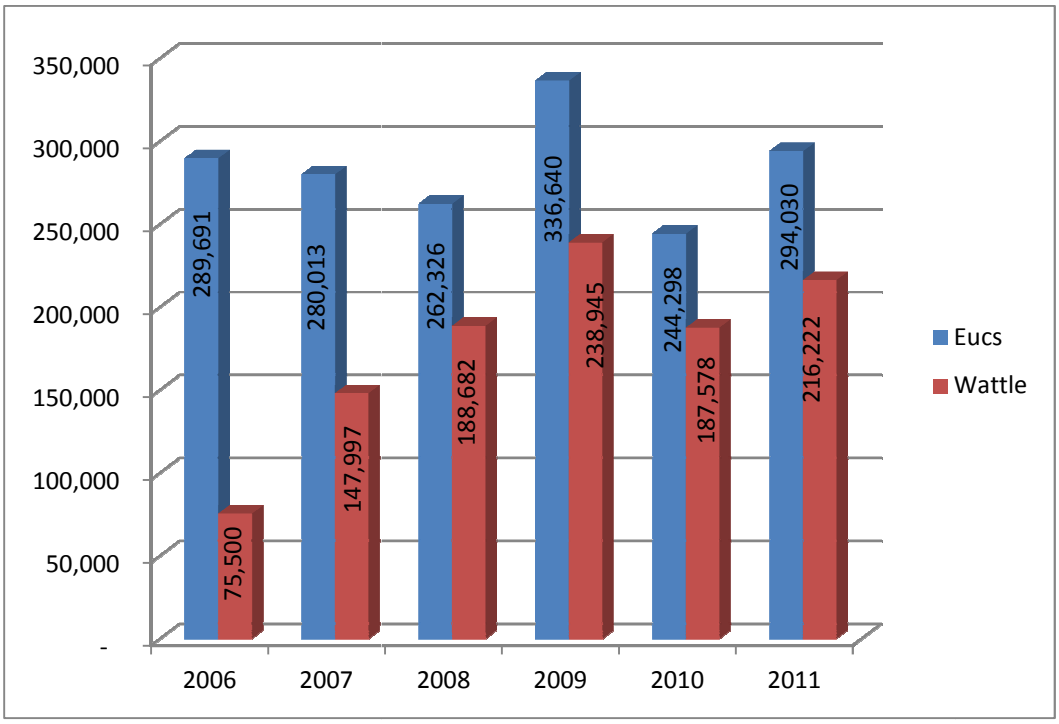

Figure 2.12 Annual Wood Chips Exports from Durban per Specie
Source: NCT Durban Wood Chips (Pty) Ltd, 2011.

In KwaZulu-Natal there are five wood chip mills, four in Richards Bay and one in Durban. Figure 2.13 illustrates the wood chip export from South Africa in 2010. Wattle wood chips export totalled 1 153 000 tons and Gum wood chips totalled 1 114 000 tons. The total tons exported was 2 267 000 tons on 59 vessels (ships). 46 of these vessels were from the Port of Richards Bay and 13 from the Port of Durban. As the Japanese hardwood chip market recovered from the high levels of stock of wood chips, the supply pattern into the important Japanese market improved and stabilised (Niebuhr, 2011). According to Niebuhr (2011), the long term relationships that have been developed by NCT and its wood chipping subsidiaries and it's Japanese customers and trading houses, was invaluable in creating financial stability for NCT's members.

Shipper	Buyer	User	Green Tonnage(000) (1,000 MTs)			Vessels		
			Wattle	Gum	Total	Wattle	Gum	Total
BayFibre	Sumitomo	Nippon (B.Fibre)	371	140	510	9.2	4.3	13.5
		Nippon (FCO)	9	16	25			
	Total		380	155	535	9.2	4.3	13.5
CTC TP	Sumitomo	Nippon	142	152	294	3.5	4	7.5
		Moorim		37	37		1	1
	Itochu	M-real		35	35		1	1
	Total		142	225	366	3.5	6	9.5
SilvaCel	Marubeni	Moorim	38	37	75	1	1	2
		Daio			0			0
		Chuetsu		71	71		2	2
	Itochu	Daio	103		103	3		3
		Mitsubishi	38		38	1		1
		Chuetsu		108	108		3	3
		M-real		35	35		1	1
	Total		180	251	431	5	7	12
ShinCel	Marubeni	Oji	124	70	194	3	2	5
		Moorim	36		36	1		1
		Daio	17	18	35	0.5	0.5	1
	Hokuetsu	Hokuetsu	51	109	160	1.2	2.8	4
	Total		229	196	425	5.7	5.3	11
DWC	Hokuetsu	Hokuetsu	223	287	510	5.5	7.5	13
	Total		223	287	510	5.5	7.5	13
Total from RSA			**1,153**	**1,114**	**2,267**	**28.8**	**30.2**	**59**

Figure 2.13: Wood Chip Exports from RSA 2010

Source: NCT Durban Wood Chips (Pty) Ltd, 2011.

Japanese paper companies are the largest purchasers of wood chips from South Africa. Figure 2.14 illustrated the wood chip imports by Japanese companies for the 2010 year. A total of 28.8 vessels (ships) of Wattle wood chips and 30.2 vessels of Gum wood chips were purchased from South Africa. From the Port of Durban 5.5 Vessels of Wattle wood chips and 7.5 vessels of Gum wood chips were purchased totalling 13 vessels carrying 510 000 tons (see figure 2.13). A total of 2 267 000 ton of wood chips were purchased by 8 Japanese paper companies detailed in Figure 2.14.

User	Buyer	Shipper	Green Tonnage(000) (1,000 MTs)			Vessels		
			Wattle	Gum	Total	Wattle	Gum	Total
Nippon	Sumitomo	BayFibre	371	140	510	9.2	4.3	13.5
		Forestco	9	16	25			
		CTC TP	142	152	294	3.5	4	7.5
	Total		521	308	829	12.7	8.3	21
Moorim	Sumitomo	CTC TP		37	37		1	1
	Marubeni	SilvaCel	38	37	75	1	1	2
		ShinCel	36		36	1		1
	Total		75	73	148	2	2	4
M-real	Itochu	CTC TP		35	35		1	1
		SilvaCel		35	35		1	1
	Total		0	71	71	0	2	2
Daio	Marubeni	SilvaCel			0			0
	Itochu	SilvaCel	103		103	3		3
	Marubeni	ShinCel	17	18	35	0.5	0.5	1
	Total		121	18	138	3.5	0.5	4
Chuetsu	Marubeni	SilvaCel		71	71		2	2
	Itochu	SilvaCel		108	108		3	3
	Total		0	179	179	0	5	5
Hokuetsu	Hokuetsu	ShinCel	51	109	160	1.2	2.8	4
	Hokuetsu	DWC	223	287	510	5.5	7.5	13
	Total		274	395	669	6.7	10.3	17
Mitsubishi	Itochu	SilvaCel	38		38	1		1
Oji	Marubeni	ShinCel	124	70	194	3	2	5
Total from RSA			**1,153**	**1,114**	**2,267**	**28.8**	**30.2**	**59**

Figure 2.14: Japanese Wood Chip Imports from RSA per Company
Source: NCT Durban Wood Chips (Pty) Ltd, 2011.

2.4 Proposed Tariff Increase Re-Alignment for Wood Chips 2010 / 2011

Table 2.3 illustrates the tariff paid per year for the export of wood chips from the Port of Durban. The average annual increase between 2007 and 2011 was 5.92%. The proposed increase for the financial year ending April 2012 was 612.37%.

Year	Tariff	Percentage Increase
2006 / 2007	4.56	-
2007 / 2008	4.77	4.60 %
2008 / 2009	5.09	6.71 %
2009 / 2010	5.5	8.01 %
2010 / 2011	5.74	4.36 %
2011 / 2012 (proposed)	40.89	612.37 %
2011 / 2012 (Actual)	6.00	4.53 %

Table 2.3: Tariffs for Wood Chips over the Past Five Years
Source: NCT Durban Wood Chips (Pty) Ltd, 2011.

2.4.1 Impact of the Proposed Tariff Increase Re-Alignment

According to Reitz (2010), if the proposed tariff increase for wood chips is approved, the resultant effect will be a loss of profits in excess of R 50 million to the members of NCT Forestry Co-operative Limited. More than 25% of NCT Forestry's 2000 members are small Black growers who farm on tribal land in Zululand and the KwaZulu-Natal midlands. A significant quantity of wood chips also comes from farms that have recently become owned by Black communities as a result of the government's land restitution programme. Wood chips are sold in US Dollars. As illustrated in figure 2.9 the exchange rate of the South African Rand (ZAR) and the United States Dollar (USD) fluctuates considerably. NCT Forestry, being co-operative, acts to stabilise the price of wood chips on behalf of its members. Currently, NCT Forestry subsidises its members by approximately R 40/mt and will not be able to further subsidise its members to account for the proposed tariff increase. The proposed tariff increase will increase the cost of exporting woodchips by about R35/mt. The smaller growers, may, in all probability, go out of business if an increase of this magnitude came into effect. Medium and larger growers are also vulnerable, along with their work forces and this increased cost will create an unprecedented ripple effect not only on their workforce, but also on those industries that support these growers. Under such circumstances, the socio-economic effect of

the proposed tariff increase or re-alignment is catastrophic and cannot be sustained by many businesses in the wood chip industry.

The proposed tariff increase is not systematic, consistent or on a comparable basis given that the annual tariff increase over the past 5 years has been between 4.36% and 8.01% as set out in table 2.3 (Reitz, 2010). According to Reitz (2010), the proposed tariff increase is unfair to the extent that it disproportionately affects the wood chip industry relative to other proposed port tariff changes and re-alignments. Transnet National ports Authority (TNPA) is a State Owned Enterprise (SOE), and should operate in the public interest. The tariff increase discriminates against the exporters of wood chips and there is no evidence submitted by the TNPA that such discrimination is in the public interest. Given that the proposed tariff increase will also have a disproportionate and discriminatory affect on NCT Forestry's members, and particularly those from previously disadvantaged groups, such discrimination cannot be in the public interest. A 612.37% increase does not allow predictability or stability for the wood chip industry and will price the wood chip industry out of the international market and effectively result in the collapse of the South African wood chip industry.

2.5 Challenges faced by Private Timber Farmers

The private timber farmers in the forestry sector are facing a number of challenges that hamper timber farmers from increasing timber production. The most significant challenges include land reform, fires, transportation costs, timber theft and municipal rates.

2.5.1 Land Reform and Land Claims

Hall (2010) is of the view that the land restitution was intended to correct past wrongs, to restore unfair dispossession and to heal. In post apartheid South Africa, land restitution is expected to help undo racially slanted patterns of land ownership in the urban areas and the countryside. As part of the wider land reform process, it must help dismantle racialised privilege in property rights. At the same time,

restitution performs important symbolic work by acknowledging histories of injustice and their impacts on individuals, families and communities (Hall, 2010).

The Restitution of Land Rights Act 22 of 1994 (South Africa's land reform programme), was adopted in 1994, by the African National Congress (ANC) led government, has a long way to go in redressing the historical injustice of land dispossession, forced removals and denial of access to land (Seokoma, 2011). The target set by the land reform programme was the 2014 deadline for a third of the country's farmland to be redistributed from white owned farmers to the black majority. Seokoma (2011) is of the view that The Restitution of Land Rights Act of 1994 allows South Africans to claim back their land, which was lost as a result of the Land Act of 1913. According to Seokoma (2011) by 2004 (ten years into democracy), a total of 36 489 claims had already been settled involving about 85 000 households. When apartheid was dismantled, less than 10 percent of the population was made up of whites whom had 90 percent of the land in their hands. Seokoma (2011) states that black people need their ancestral land and aim to utilise this land for agricultural production [subsistence or commercial], for settlement or for non-agricultural enterprises. Seokoma (2011) is of the view that without land, it will be impossible for them to participate in the mainstream economy. Government has already indicated its intention to review both the Land Restitution Act of 1994 and the principle of "willing buyer and willing seller". Like many South Africans, policy makers including, Nkwinti Land Reform Minister 2010 also shares the sentiment that the "willing buyer and willing seller" principle has not worked. Seokoma (2011) states that "the problem with this principle is that land owners are not obliged to sell their land, even if communities have sufficient proof that it belongs to them. In addition, this principle has created room for land owners to charge exorbitant prices, especially when selling the land to government for redistribution".

According to Lahiff (2008), after 14 years of democracy in South Africa, the political and social spectrum has agreed that the land reform programme is in severe difficulties. The criticism of the land reform programme is that it is failing to reach its targets or deliver on its multiple objectives of historical redress, redistribution of wealth and opportunities, and economic growth. The particular weaknesses highlighted include the failure to impact significantly on the land tenure systems

prevailing on commercial farms and in the communal areas, the slow pace of land redistribution, and the widespread perception that what redistribution of land has taken place has not been translated into improvements in agricultural productivity or livelihood benefits for the majority of participants (Lahiff, 2008). Regardless of some changes in direction and much political hand-wringing, the policy fundamentals remain largely unchanged from the formula that was put in place at the time of the transition to democracy. According to Lahiff (2008), is not so much the chronic underperformance of a policy area that many saw as critical to post-apartheid transformation, but the ability of the government to persist for so long with an approach that enjoys so little popular support and is clearly failing to deliver on its ostensible objectives.

According to James (2010), one arena in which the ideological battle between state and market has been fought with particular virulence in South Africa has been that of land reform. Conceptualised from early on as a panacea through which many ills would be cured, it initially appeared to satisfy both those whose sights were set on redistributive egalitarianism and those wanting to promote growth by encouraging individual enterprise through secure property ownership. At the same time, it appeared to fulfil the demands of restorative justice which was so urgently needed at the end of apartheid's last years. As it gradually became clear that few, if any, of these expectations were being met, the interwoven strands began to separate. Proponents of redistribution battled those who favoured market-driven reforms and both were at odds with those whose sights were set on restoring the wrongs of the past. Attempts to foster a land-owning, middle class black farming constituency became paramount, eclipsing the previous emphasis on safeguarding the basic residence rights and welfare of the rural poor through land redistribution or tenure reform (Hall & Williams, 2003).

South Africa's official programme of land reform was from the outset conceptualised in terms of discrete categories (James, 2010). From the early 1990s it had become clear that it was not a homogeneous or uniformly deprived black population to which land rights would be restored or newly given, but rather one which was deeply divided along lines of class. Some of the intended beneficiaries of the land reform programme are former title-holding property owners while others belong to the

category of people often termed squatters over the course of the previous century (Freund & Witt, 2010). Both were left landless in the apartheid era, but the latter had never enjoyed property rights. Several branches of the programme were designed in recognition of this differentiation: restitution, redistribution and tenure reform. Restitution would concentrate on returning land to titled landowners who had lost their property during the apartheid era as a result of the infamous “black spot” forced removals during which farms had been seized by the state and their owners as well as their black tenants, loaded into government trucks and unceremoniously driven to designated villages or “dumping grounds” in the homelands (James, 2010). Redistribution, the second branch of the programme, would allow for those black people who had never had secure or any claims on landed property to group together and purchase farms with the aid of a government grant, known as the SLAG (settlement land acquisition grant). Tenure reform, the third branch, would protect the rights of those residing on land but depending on others for their occupation of it: chiefs (in the former homelands) or white farmers (beyond them). The interdependence of these three branches, aimed at three social sub-categories, was acknowledged by the government (James, 2010). According to Joemat-Pettersson (2009), land claims from local communities are putting pressure on the industry and about 65% of privately owned plantations are under land claims and this will have an impact on the sector, especially in terms of securing the resource for future operations. Therefore Mondi for example, have dedicated departments for dealing with land claims and for educating and supporting the new owners on Forestry.

2.5.2 Fires

According to Godsmark (2007), 2007 was a bad year for fires in South Africa. During the period between the end of June and early August, approximately 77 000 of the 1.2 million hectares of plantations were damaged by runaway fires. This damage occurred mainly in KZN. This damage represented 6.4% of the national plantation resource. These fires caused severe impact on the environment and biodiversity. Visits to the burnt compartments in the affected areas revealed that the topsoil was left exposed to the elements by the fires and that there were no signs of life in the path of the fires. Godsmark (2007) also reported that the fires caused damage

estimated at approximately R2 billion, and another R6 billion to downstream processing. During 2009, 19 805 ha of timber was destroyed by fire (Godsmark, 2010).

Figure 2.15 illustrates the damage to plantations from 1980 to 2009. The total area damaged over this period is 930 573 ha.

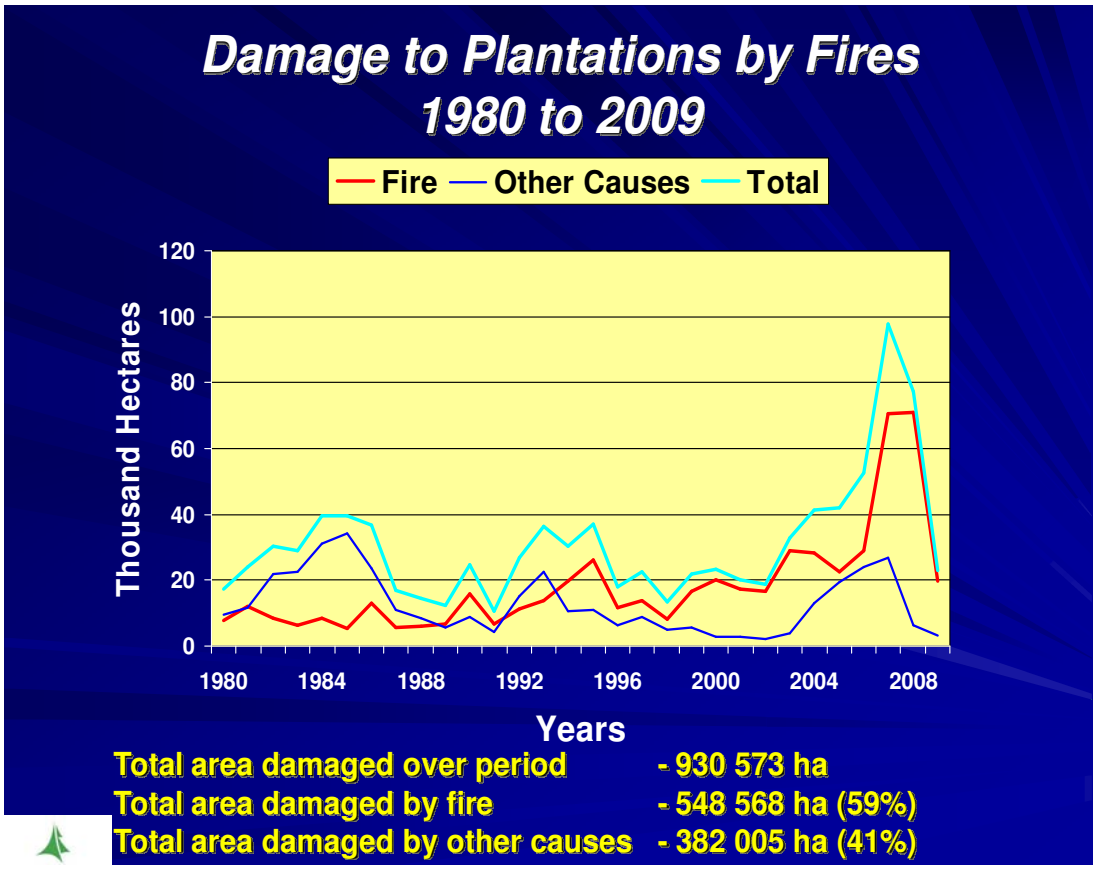

Figure 2.15 Damage to Plantations by Fires, 1980 – 2009
Source: Godsmark, 2010.

Figure 2.16 illustrates the damage to plantations by fire in 2009. A total of 19 805 ha was damaged by fires. 17.9% of these fires were caused by Arson and 22.4% was accidental however 55.9% is unknown.

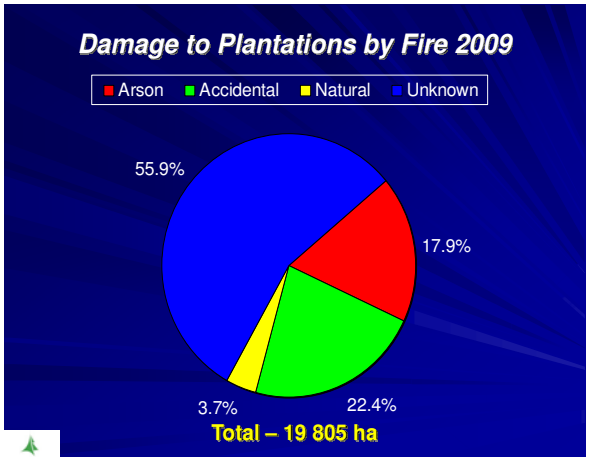

Figure 2.16 Damage to Plantations by Fire, 2009
Source: Godsmark, 2010.

Figure 2.17 illustrates the area damaged by fire by Genus & Province. In KZN 13 948 ha was damaged by fire compared to Mpumalanga where 47 760 ha was damaged. The total area damaged by fire was 63 964 ha.

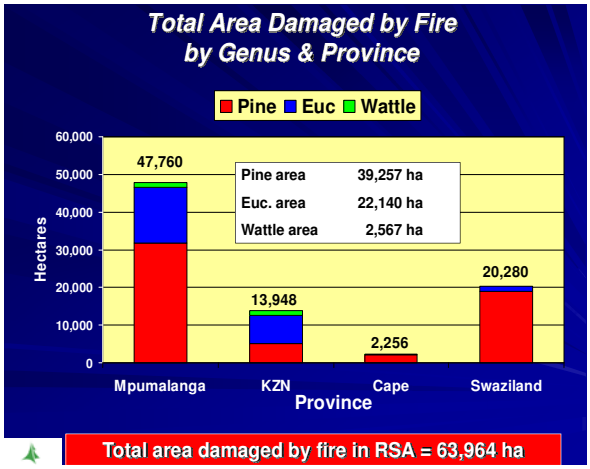

Figure 2.17 Total Area Damaged by Fire by Genus and Province
Source: Godsmark, 2010.

Figure 2.18 illustrates the total cost of fire damage by product and province. The cost of Fire Damage in KZN was R285 million compared to Cape Town R51 million and Mpumlanga R1 047 Million. In South Africa the total cost of lost timber amounted to R1.4 billion.

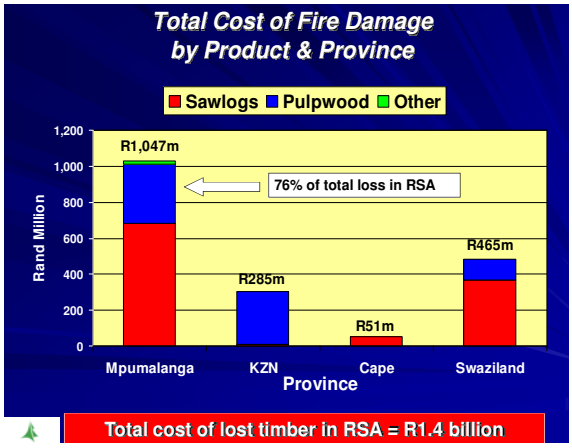

Figure 2.18 Total Cost of Fire Damage by Product and Province
Source: Godsmark, 2010.

2.5.3 Transportation Costs

According to King and Ittmann (2011), SA's logistics costs as a percentage of GDP were 13.5% in 2009 as compared to 14.7% in 2008. The total logistics cost declined from R339 billion in 2008 to R323 billion in 2009. The tonnage transported by road was 88.7% and 11.3% by rail (King & Ittmann, 2011). King and Ittmann (2011) are of the view that too much freight is being transported on road. While market forces determine these, one should nevertheless ask the question whether rail is indeed cheaper than road, when one considers the entire value chain. In order to have economic growth and development modern and well maintained infrastructure is critically important. Supply chains drive on and are the major users of this extensive infrastructure network. South Africa has a wide-ranging road network that goes through the entire country. Millions of rand of damages are caused each year to vehicles by potholes.

Only profitable rail infrastructure is utilised on the rail side, while large components – notably the branch lines – in the more rural areas are not used and are becoming increasingly dilapidated (King & Ittmann, 2011). Over the past six years the growth of freight on rural roads and rail has increased by 85% and the infrastructure on which this freight is carried is deteriorating the fastest (King & Ittmann, 2010). Steyn and Bean (2011) show that company logistics cost has increased considerably by the increase in maintenance and repair costs caused by the deteriorating road quality. Cargo on trucks is damaged as the trucks that travel on the deteriorated roads experience increase vibrations. The other consequences of trucks travelling on damaged roads are increased fuel consumption and increased road damage and damage to the environment (Steyn & Bean, 2011).

Figure 2.19 illustrates the decline in the volume transported on rail and the increase in the volume transported by road transport by NCT Forestry. The tonnage transported by rail has decreased by 63.76% between the year 2000 and 2011 while road transport has increased by 125.83% for the same period. According to Mac (2010), the decline of freight rail over the past few years has been fuelled by high rail tariff increases, poor service, collapsing infrastructure and the closure of some

branch lines. The combined effect of this scenario is that more and more timber is being transported by road.

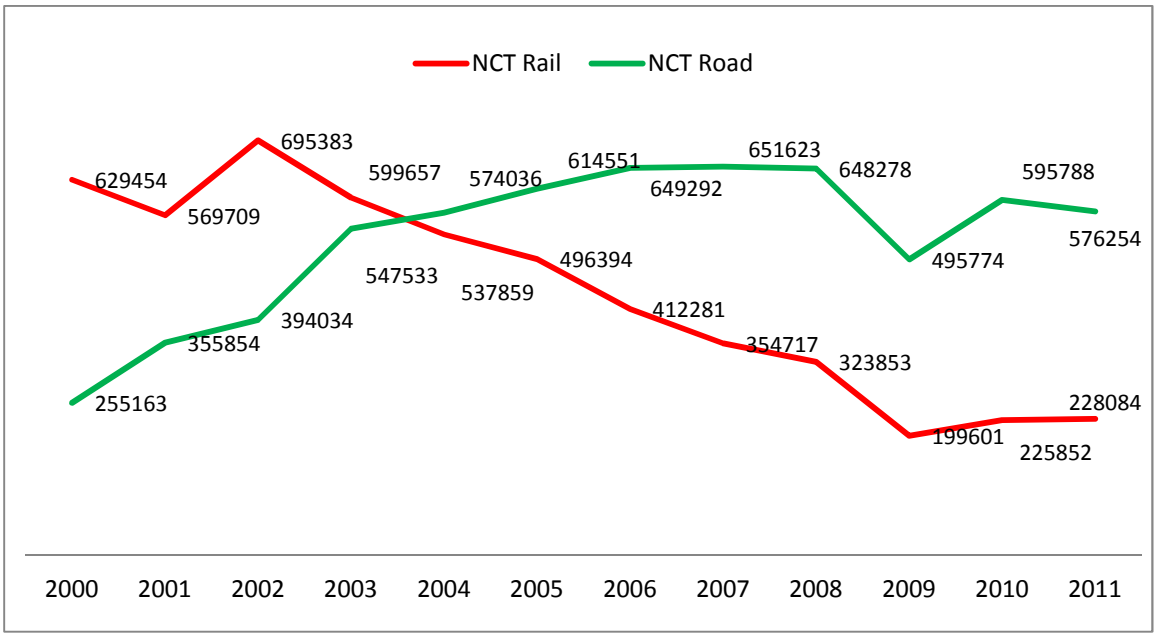

Figure 2.19 Rail versus Road Transport
Source: NCT Forestry, 2011.

Havenga et al. (2011) also reported that in 2009 the cost of logistics declined from 14.7% to 13.5% in relation to the GDP. An expectation was created that the cost of logistics in relation to GDP would decrease due to the significant decrease in the price of interest and diesel. Transport costs are reduced by 9.2% while the price of diesel was reduced by 28.3% (Havenga et al., 2011). Tons per kilometre, as the key indicator of transport demand, declined by 3.7% (Havenga et al., 2011).

Figure 2.20 illustrate the road and rail tariff increases between the year 2000 and 2011. The migration of timber from rail to road over the past five years is a symptom of rising freight tariffs, the closure of branch lines and poor service. The consequences for timber growers and processors are increasing transport costs and the marginalisation of timber growing areas situated far from the mills (Mac, 2010).

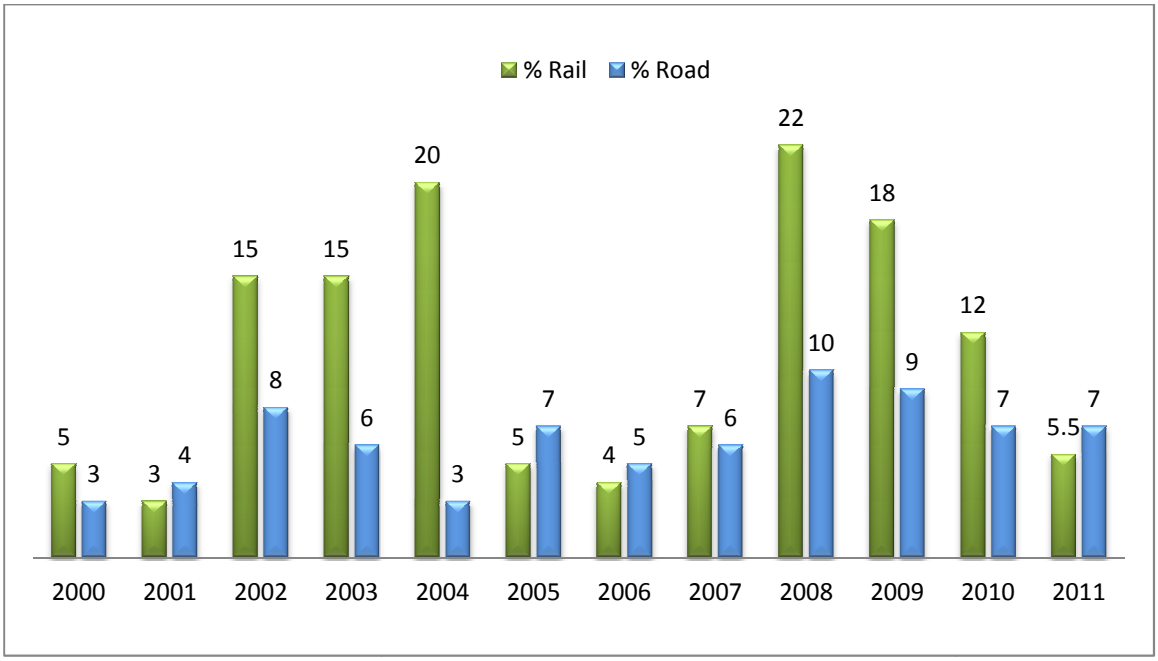

Figure 2.20 Road versus Rail Tariff Increases
Source: NCT Forestry, 2011.

According to Goately (2009) the main contributor to South Africa's deteriorating road infrastructure is overloading. The Road Transport Management System (RTMS) is an industry led self regulation scheme that encourages users engaged in road logistics to act responsibly. Its purpose is to implement a vehicle management system that preserves road infrastructure, improves road safety and increases the productivity of the logistics value chain. The prospect of improving efficiencies and reducing costs in round log timber supply chains is invaluable as the timber industry transports approximately 14 million tons per annum Goately, 2009). Van Zyl (2010) is also of the view that overloading causes accelerated road deterioration which, together with inadequate vehicle maintenance, driver fatigue and poor driver health, contributes significantly to South Africa's poor road safety record.

In March 2010 the price of diesel was R6.90 per litre in the coastal areas and in March 2011 the price was R8.64 per litre. The increase equates to 25% year on year. The timber farmer's overall cost namely transport and harvesting, increased by 53% as a result of the increase in the diesel fuel price (Goately & Van Zyl, 2011). This increase costs reduces the timber farmer's profit margins.

2.5.4 Municipal Rates

According to Peter (2011), an application was made to the Minister of Provincial and Local Government (subsequently renamed Cooperative Governance and Traditional Affairs) to limit levies by municipalities to the maximum rand rateage of 0.5% for agricultural and forestry property. According to Forestry South Africa's (FSA) Annual Report (2010), FSA has been involved in actions to stop municipalities from charging property rates on agricultural and forestry land that would harm the financial viability of the Sectors. Due to this application being denied by the Minister, FSA decided to continue with a legal challenge. Forestry South Africa is of the view that the minister had made an incorrect decision by disregarding the abundant evidence that was submitted outlining the severe consequences that unsustainably high property rates could cause to the forestry sector. The hearing was held on the 15th April 2011. It was reported that unfortunately the application was dismissed (Godsmark, 2011). According to Godsmark (2011), regardless of this setback excellent progress has been achieved concerning preventing the possible damage that unsustainably high rates could cause the forestry sector. Municipalities are now starting to proceed more conscientiously and the regulatory environment has changed for the better.

2.5.5 Timber Theft

The price paid for timber in the South African forestry market has started to increase due to the increase in demand for timber (Thompson, 2005). The theft of pulpwood is an attractive option for the thieves as it is easy to handle. The logs are generally in 2.4m lengths. Ownership of these logs is difficult to determine. These logs are disposed of easily due to the high demand by downstream processors. Thieves are constantly creating inventive measures to steal the timber. Farmers and foresters are constantly trying to find ways to keep up with these inventive measures.

According to Thompson (2011) the most common form of timber theft is called skimming. Skimming is a process were a little bit of timber is removed from rail wagons and road trucks along the routes these vehicles use to get to the mills. Skimming usually happens at night. Timber theft also takes place at timber depots.

Another form of timber theft is when transporters, acting as timber producers, exploit rural suppliers whom are small scale producers and have limited access to information. This leads to illegitimate deals and sourcing of timber. These deals can be in the form of involvement between syndicates and employees at the manufacturing or processing plants and gaining entry to the mills. Unlawful use of delivery documentation by third parties is another form of theft.

2.6 Conclusion

Chapter two reviewed the literature focussing on the wood chip exports from the Port of Durban and the challenges faced by private pulpwood farmers. It is clear from the literature review that the demand for wood chips by international companies is increasing. The price of wood chips is US Dollar based and therefore it becomes cost effective for international companies to import wood chips from South Africa. Due to the strong Japanese Yen against the US Dollar the Japanese companies pay less for the wood chips in 2010 than in 2002. Due to the increased demand and threats to sustainable supply for the wood chips the wood chip industry is concerned that the timber resources available may not be sufficient to meet future demand. In the literature review the factors that affect future timber production was highlighted. These factors were land reform, fires, transportation costs, municipal rates and timber theft. Chapter three will review the research methodology and data collection techniques that were used in this study.

CHAPTER 3

Research Methodology and Data Collection

3.1 Introduction to the Research Methodology

Nevelle (2005), stated that research is a process of enquiry and investigation that is systematic, methodical and ethical which can help solve practical problems and increase knowledge. According to Collins and Hussey (2003), the purpose of research was to review or synthesize existing knowledge, investigate existing situations or problems, provide solutions to problems, explore and analyse more general issues, construct or create new procedures or systems, explain new phenomenon, generate new knowledge or a combination of any of these points.

Chapter three discusses the research methodology and data collection techniques applied in this study. It was critical to establish a research design that would provide acceptable answers to the research questions and research problem.

3.2 Aims and objectives

The objectives of this study will be to:

- To examine the trends in wood chips exports from the Port of Durban.
- To examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal.

3.3 Participants and Location of the Study

This study was conducted in Durban but targeted participants from various parts of the Southern KZN region. This study looked at participants from the province of KwaZulu-Natal (KZN), South Africa (SA) focussing on the Southern KZN region extending from Durban to George. This study targeted 119 participants, all of them being timber farmers that were members of the NCT Forestry Co-operative Limited. This is the total population of timber farmers in the Southern KZN region that supply NCT Durban Wood Chips. The primary reason for selecting these participants was that these individuals were responsible for the supply of timber to the NCT Durban Wood Chip mill. The timber is delivered by rail and road transport from the farmers. The timber is then chipped and exported in bulk from Durban via ships to international clients. As mentioned, these farmers are members of NCT Forestry Co-operative Limited.

Participants for the qualitative aspect of the study were three selected respondents employed by NCT Forestry Co-operative Limited. These included the Group General Manager, the Group Logistics Manager and the Group Assistant General Manager. These key personnel were selected on the basis that they had a strong forestry background and were involved on a daily basis with timber farmers for the supply of timber to the NCT Forestry group of companies. These participants also contributed greatly to fulfilling the objectives of the study due to the nature of their work.

The targeted participants formed a vital part of the study as they were in a position to answer the questions of this study and fulfil the objectives that the study proposed.

3.4 Data Collection Strategies

Sekaran and Bougie (2010), explain that research provides the necessary information that guided managers to make informed decisions to successfully deal with problems. According to Sekaran and Bougie (2010), data could be quantitative (gathered through structured questions) or qualitative (as generated from the broad

answers to specific questions in interviews, or from responses to open-ended questions in a questionnaire).

Quantitative and qualitative data was used in this study which entailed collecting both quantitative and qualitative data. For the quantitative data, questionnaires were administered via an online tool, known as QuestionPro. QuestionPro is an online analytic tool designed for research purposes. It allows for construction of questionnaires which can be sent online to the relevant participants/respondents. It also allows for data analysis and presents various methods of analysing data. The study was targeted towards a total population of 119 participants, all of them being timber farmers that were members of the NCT forestry cooperative limited. These farmers were the primary source of timber supply and were responsible for the sustainable growth of timber as well.

3.4.1 Quantitative Data

Questionnaires were used to acquire the relevant responses from the timber farmers who made up the majority of the study. The questionnaire consisted of a total of 9 questions all pertaining to the challenges faced by the respondents and the availability of timber from 2011 to 2015 which was a core aspect of the study.

3.4.2 Qualitative Data

Interviews were carried out on the group general manager, the group procurement manager and the group assistant general manager of NCT Forestry Co-operative limited. The interview consisted of 8 structured questions. These questions pertained more to the challenges faced by timber farmers from the interviewee's perspective. It also focused on establishing if timber supply was increasing or decreasing in Southern KZN. The interviews were physically conducted with the interviewees in the Head Office, Pietermaritzburg, KZN.

Qualitative data was gathered via QuestionPro through answers to open ended questions. In addition, Qualitative data was collected via interviews on three selected

participants belonging to NCT forestry cooperative limited. As mentioned, these included these included the group general manager, the group procurement manager and the group assistant general manager. The interviews were physically conducted at their vocational offices (Head Office, Pietermaritzburg, KZN).

3.5 Construction of the Questionnaire

QuestionPro was used to construct the questionnaire to gather quantitative data on tonnage, and so forth and qualitative data with open-ended questions. As mentioned under 3.4, QuestionPro is an online analytic tool designed for research purposes. It allows for construction of questionnaires which can be sent online to the relevant participants/respondents. It also allows for data analysis and presents various methods of analysing data. The quantitative questions were designed in line with answering the research questions of the study and meeting the objectives. The majority of the questions were close-ended but some were open-ended to allow further feedback from the respondents. A 5 point Likert scale was used for several close-ended questions. For example, what are the dominant reasons for the chosen markets? (Please rate each reason). Using the Likert scale is an effective method for obtaining consistent survey responses and allows a participant to provide feedback that is slightly more expansive than a simple close-ended question (Parnaby, 2006). Other questions prompted numerical responses, like, volume / tonnage of timber. The questionnaires were administered between 5/09/2011 and 23/09/2011. Due to confidentiality of member's details, the questionnaire had to be forwarded to the respondents electronically via NCT Forestry Co-operative Limited. A further two reminders were sent to respondents via NCT Forestry Co-operative Limited on the 14th and 16th September 2011.

An interview schedule was drawn up consisting of 8 structured questions. This was used for qualitative data collection. The interviews were designed to gather data from NCT's executive management's perspective on the rated challenges faced by the respondents (timber farmers) in southern KZN. This also served as a form of validation of the responses obtained from the quantitative questions in the

questionnaire. Interviews were conducted physically and verbally at the premises of the interviewees in Pietermaritzburg. The interviews were also recorded to promote validity. The interviews were conducted on the 28 September 2011.

3.6 Recruitment of Study Participants

For the respondents that were used in the quantitative analysis, the management of NCT was approached to acquire the necessary permission to conduct the study on the participants. The gate-keeper's letter was furnished by NCT management as well as the contact details of the relevant participants from the NCT database. Due to the confidentiality of the respondents, the questionnaire was distributed electronically together with a covering letter and the link to the electronic survey (QuestionPro) to the total population of the respondents (119). This was done by the assistant general manager of NCT. The questionnaires were administered between 5/09/2011 and 23/09/2011. An informed consent form was included in the electronic questionnaire. The respondents had to agree to the informed consent before they could proceed with the survey questionnaire.

For the qualitative respondents, the interviewees were contacted telephonically and interviews were requested. The purpose of the study was briefly explained to these interviewees and permission obtained via telephone as well. The interviewees were based at the head office of NCT in Pietermaritzburg (Capital city of KZN). The interviews were conducted on the 28 September 2011. The interviews were recorded and transcribed. All three interviewees signed an informed consent form thereby granting permission for the interview to be conducted.

3.7 Pretesting and Validation

Vanderstoep and Johnston (2009), explain that pretesting was a crucial step that occured early in the survey development process. Flaws could be identified and corrected in surveys under development through pretesting. In order for pretesting to be effective a clear understanding of each survey question's intention or intent was

necessary. Through pretesting the researcher was encouraged to clarify the survey's goals. This clarification guided the entire research project. When problems are identified and addressed early in the survey process, the researcher would have more time to enhance the survey mechanism.

For this study pre-testing was done when the list of questions was distributed to fellow MBA students at UKZN who ensured that the questions were to the point, unambiguous, and answerable. Pre-testing was also done when the list of questions was distributed to suitable candidates that were involved in timber farming. The pre-test process assisted in testing the phrasing of the questions, removing confusing statements and examining the data collection method. The responses to the questions and comments were useful in improving the final list of questions that were distributed in the survey and asked at the interviews.

3.7.1 Validity

The qualitative interviews that were conducted proved to be insightful and information rich. Being face to face interviews, the primary method of validity was to record the interview. This promoted better analyses of the qualitative information collected as the interview could be critically analysed repeatedly.

According to Sekaran and Bougie (2010), the Likert scale was designed to examine how strongly subjects agree or disagree with statements on a five-point scale. In quantitative research the Likert scale was the most commonly used scale. According to Vanderstoep and Johnston, a Likert scale was a type of response alternative in which participants indicate their degree of agreement with a stated attitude or judgement. For this study a 5 point Likert scale was used for most close-ended questions and other questions prompted numerical responses as mentioned in 3.4.1 above. A benefit of using a Likert scale is that questions used are easy to understand and are an effective method of obtaining consistent answers. A shortcoming of a 5 point Likert scale is that a few options are offered, with which respondents may not completely agree. According to Parnaby (2006), the benefits of online surveys are the reduction in lengthy delays between collecting data and

interpreting the results, eliminating problems related to interpreting responses that are written by hand, placing the survey in a location where it can easily be found and administered, broadening the audience of the survey while improving response rates, removing the problems caused by lost or damaged paper surveys, reducing the time it takes for participants to complete and submit a survey, eliminating the need for data entry costs and reducing the amount of consumable materials required to administer the survey.

3.8 Administration of the Questionnaire

The questionnaire was sent via QuestionPro link to the electronic survey. As mentioned, this was done via the assistant general manager of NCT to the relevant respondents to ensure effective confidentiality of the respondents. The questionnaires were administered between 5/09/2011 and 23/09/2011. Two reminders were sent to the respondents periodically (weekly) to ensure that they were attempting the questionnaire. Out of a total of 119 respondents, 33 respondents completed the survey questionnaire resulting in a response rate of 27.73% being achieved, therefore, although responses are useful and informative, one cannot generalise the findings of this study.

3.9 Analysis of the Data

QuestionPro was the tool used to gather data from the quantitative aspect. The data collected was collated and stored on Questionpro itself. This data was then exported to Microsoft Excel where a further and detailed analysis was done on the data. Presentation of the data was done in the form of graphs generated from Microsoft Excel, descriptive statistics, correlation analysis and qualitative content analysis. The graphs were depicted in the analysis chapter of this study (chapter 4).

3.10 Conclusion

The objectives of this study are to examine the trends in wood chips exports from the Port of Durban and to examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal. The study was conducted in Durban and the participants were from the Southern KwaZulu-Natal region in South Africa. For the purpose of this study qualitative and quantitative data was used in this study. Questionnaires were administered via QuestionPro, an online analytic tool designed for research purposes. The study targeted 119 participants whom were timber farmers and were members of NCT Forestry Co-operative Limited. These farmers were the total population that supply their timber to NCT Durban Wood Chips in Durban. The timber was chipped at the Durban facility and exported via ships to international clients. Questionnaires were used to acquire the relevant responses from the timber farmers who made up the majority of the study. The questionnaire consisted of a total of 9 questions.

Qualitative data was collected via interviews on three selected participants belonging to NCT Forestry Co-operative limited. An interview schedule was drawn up consisting of 8 open-ended questions. These interviews included the Group General Manager, the Group Logistics Manager and the Group Assistant General Manager. These key personnel were selected on the basis that they had a strong forestry background and were involved on a daily basis with timber farmers for the supply of timber to the NCT Forestry group of companies.

For the respondents that were used in the quantitative analysis, **t**he management of NCT was approached to acquire the necessary permission to conduct the study on the participants. The gate-keeper's letter was furnished by NCT management as well as the contact details of the relevant participants from the NCT database. Due to the confidentiality of the respondents, the questionnaire was distributed electronically together with a covering letter and the link to electronic survey (QuestionPro) to the total population of the respondents (119). The questionnaires were administered between 5/09/2011 and 23/09/2011. This survey was viewed by 86 people however 41 participants decided not to partake in the survey. A total of 44 participants started the survey and 11 of these participants have not completed the survey. Respondents

have been informed that they may opt out from the survey if they feel they no longer want to participate in the survey. This resulted in just 33 surveys being completed resulting in a response rate of 27.73% being achieved. The majority of the questions were close-ended but some were open-ended to allow further feedback from the respondents. Likert scaling was used for most close-ended questions to allow for validity and other questions prompted numerical responses. Descriptive statistics was used to analyse the Likert scale responses.

This chapter outlined the research approach and strategy, methodology, data collection techniques and the details on the instrument and sample size. The data that was gathered from the survey questionnaire will be presented in Chapter 4.

CHAPTER 4

Presentation and Discussion of Data on Challenges faced by Private Pulpwood Farmers in Southern KwaZulu-Natal

4.1 Introduction

This chapter focuses on the findings of the research using the primary data that was gathered. This chapter gives a presentation of the results of the questionnaire completed by the participants. The results are set out in a graphical as well as a narrative format. The questionnaire comprised of 9 questions of which 8 were quantitative and 1 qualitative. The qualitative question will be discussed in chapter five.

The survey was distributed using QuestionPro to 119 participants. This survey was viewed by 86 people however 41 participants decided not to partake in the survey. A total of 44 participants started the survey and 11 of these participants have not completed the survey. Respondents have been informed that they may opt out from the survey if they feel they no longer want to participate in the survey. This resulted in just 33 surveys being completed. A further reminder was sent to the participants reminding them of the survey. It became evident that 86 of the targeted participants have decided not to complete or participate in the survey. This represents a participation rate of 27.73%. Previous surveys conducted by NCT Forestry Co-operative Limited revealed that the participation rate was approximately 16.70%.

The responses from the survey questionnaire were carefully analysed and interpreted. Each question was carefully analysed and valuable data extracted to focus on the objectives of the study and fulfil them.

Figure 4.1 indicated the completion and dropout rate of this survey. This data is graphically presented indicating a 75% completion rate has been acquired.

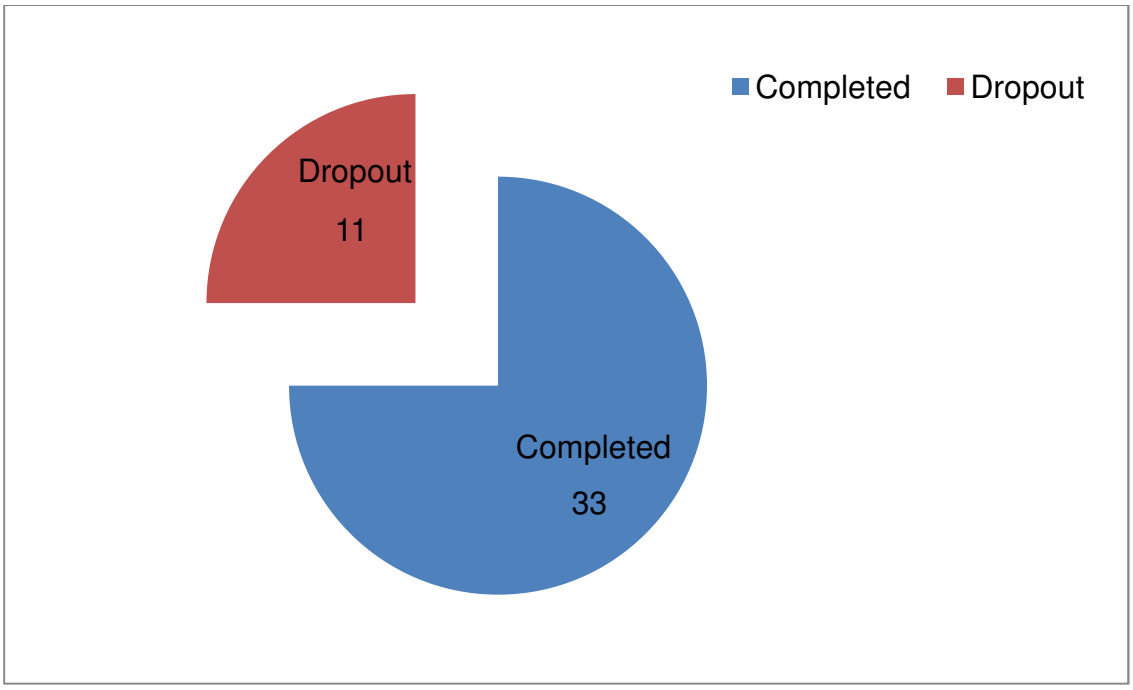

Figure 4.1 Completion and Dropout Figures from the Survey

4.2 Questionnaire Results Analysis

The questionnaire was sent out to the 119 respondents via QuestionPro. A total of 44 participants started the survey however only 33 respondents completed the survey on which the analysis will be drawn.

4.2.1 Type of Timber Plantation

The first question asked: Please indicate your type of timber plantation? The aim of the question was to identify the type of plantation that the farmers had. From the results presented 48% had Eucalyptus (Gum) plantations and 44% had Wattle while 8% had Pine plantations.

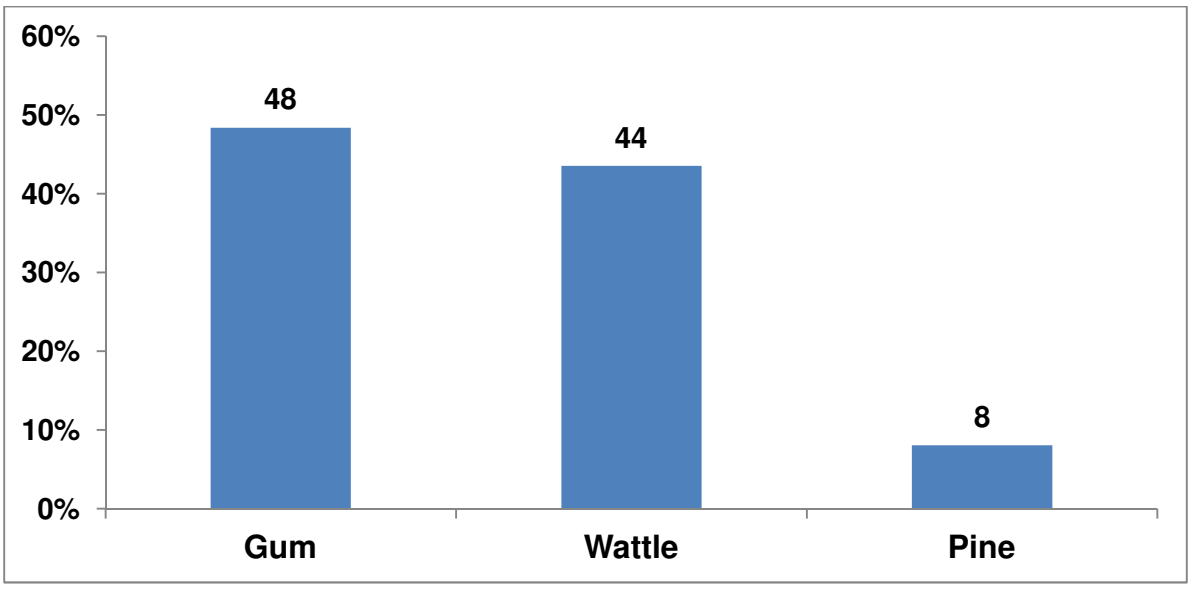

Figure 4.2: Type of Timber Plantation

Wood chip mills export Wattle and Gum wood chips only to the international pulp and paper mills. Wattle, being a much harder species takes longer to grow and has better yields than Gum. Wattle trees are harvested between 8 and 12 year cycles. Gum trees grow faster and are harvested between 6 to 11 year cycles. Wattle being a denser species fetches a higher price than Gum for the farmer and the chip mill. Pine plantations account for 8% of the respondents. Pine trees take longer to grow and are harvested between 25 and 30 years, and are used predominantly in the furniture industry (Pogue, 2008). This is one of the key reason why Pine seems to be less of a plantation priority for the timber farms. The data supports the point made by Arnold (1998) whereby he affirmed that a significant share of the planted area is accounted for by small farmers.

4.2.2 Potential Timber Production Tonnage Forecast for the Next Five Years

The second question asked: What is your potential timber production tonnage you forecast for the next five years? The aim of this question was to examine the timber availability for the next five years and to identify the specie mix over the same period. To understand the data received, this information is presented in four graphs namely 1) Gum, 2) Wattle, 3) Pine and 4) Total Tonnage.

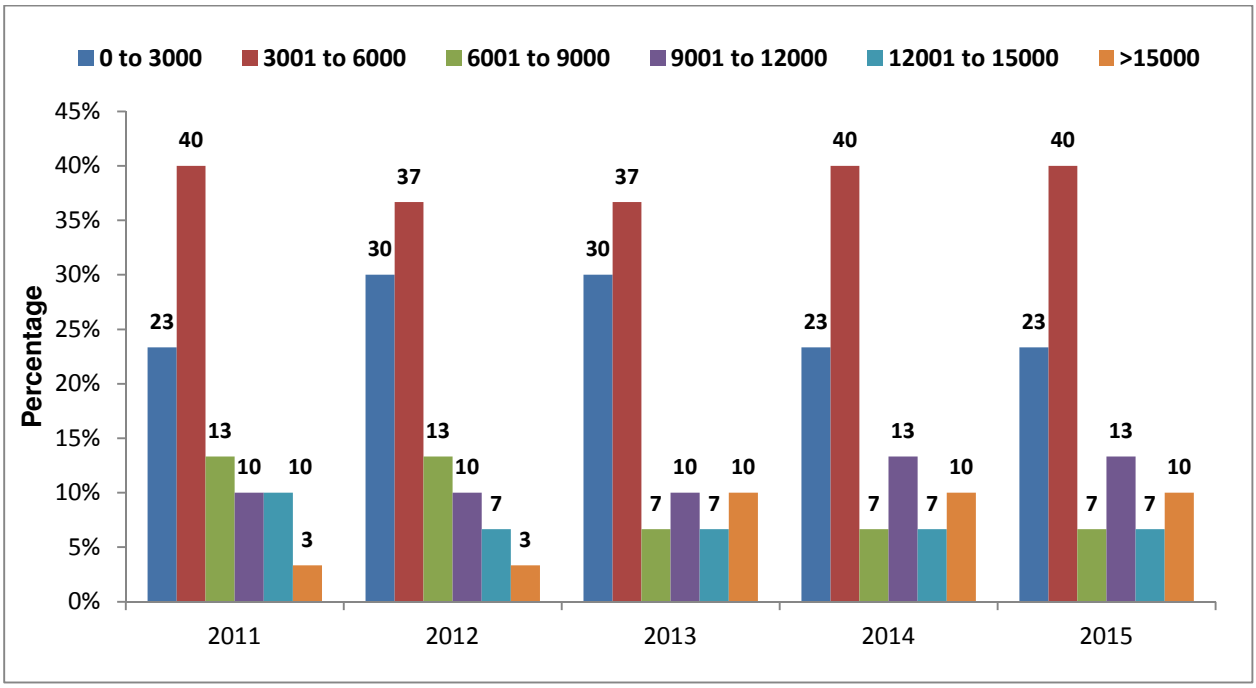

Figure 4.3: Farms Forecast Timber Production – Gum

This graph shows the potential timber production of Gum for the five year period from 2011 to 2015. The data is presented in 6 ranges for each of the years. The ranges are: Range 1: 0 to 3000, Range 2: 3 001 to 6 000, Range 3: 6 001 to 9 000, Range 4: 9 001 to 12 000, Range 5: 12 001 to 15 000 and Range 6: Greater than 15 000 tons. For example, the data presented in Figure 4.3 may be interpreted as follows:

The forecast for the 2011 Year

From the data presented 23% of the respondents will produce between 0 and 3 000 tons. 40% will produce between 3 001 to 6 000 tons. 30% will produce between 6 001 and 9 000 tons. 10% will produce between 9 001 to 12 000 tons. 10% will produce between 12 001 and 15 000 tons and 3% will produce greater than 15 000 tons. As can be noted from figure 4.3 the trend in the forecasted timber production shows an increase of 1% for the 2012 year and 11% for the 2013 year. The forecasted timber production for the 2014 and 2015 years show an increase of 4% compared to the 2013 year.

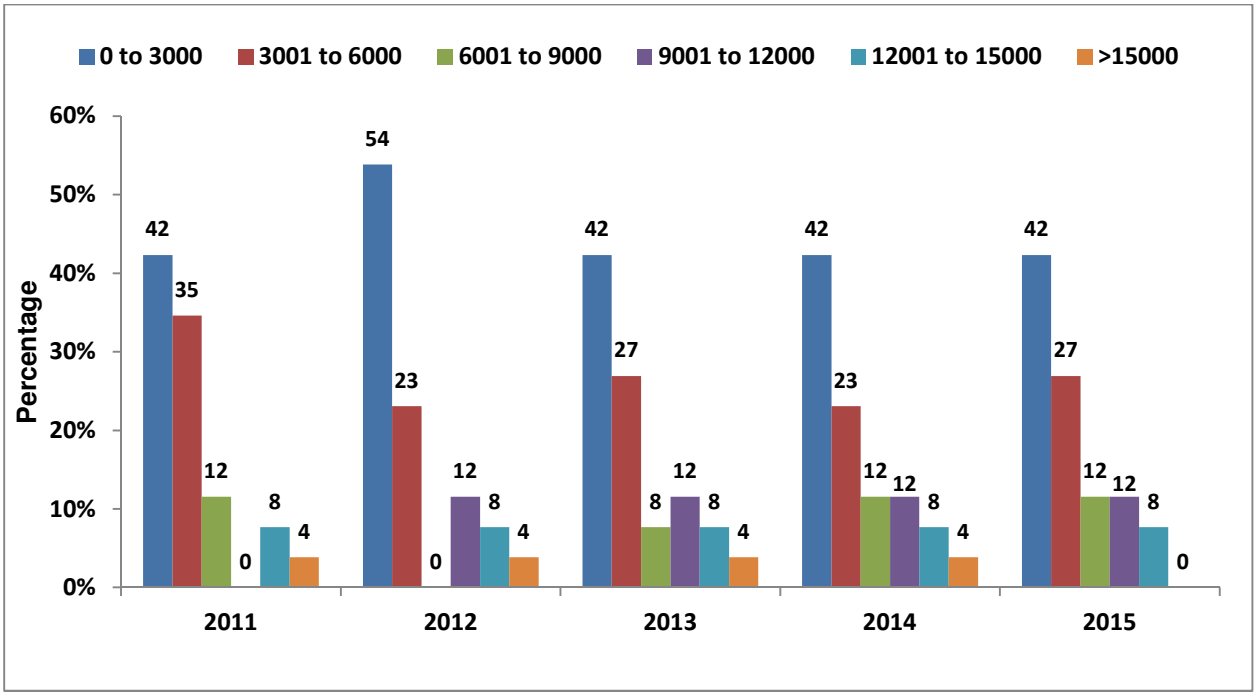

Figure 4.4: Farms Forecast Timber Production – Wattle

Figure 4.4 shows the potential timber production of Wattle for the five year period from 2011 to 2015. The data is presented in 6 ranges for each of the years. The ranges are: Range 1: 0 to 3000, Range 2: 3 001 to 6 000, Range 3: 6 001 to 9 000, Range 4: 9 001 to 12 000, Range 5: 12 001 to 15 000 and Range 6: Greater than 15 000 tons. For example, the data presented in Figure 4.4 may be interpreted as follows:

The forecast for the 2011 Year

From the data presented 42% of the respondents will produce between 0 and 3 000 tons. 35% will produce between 3 001 to 6 000 tons. 12% will produce between 6 001 and 9 000 tons. 0% will produce between 9 001 to 12 000 tons. 8% will produce between 12 001 and 15 000 tons and 4% will produce greater than 15 000 tons.

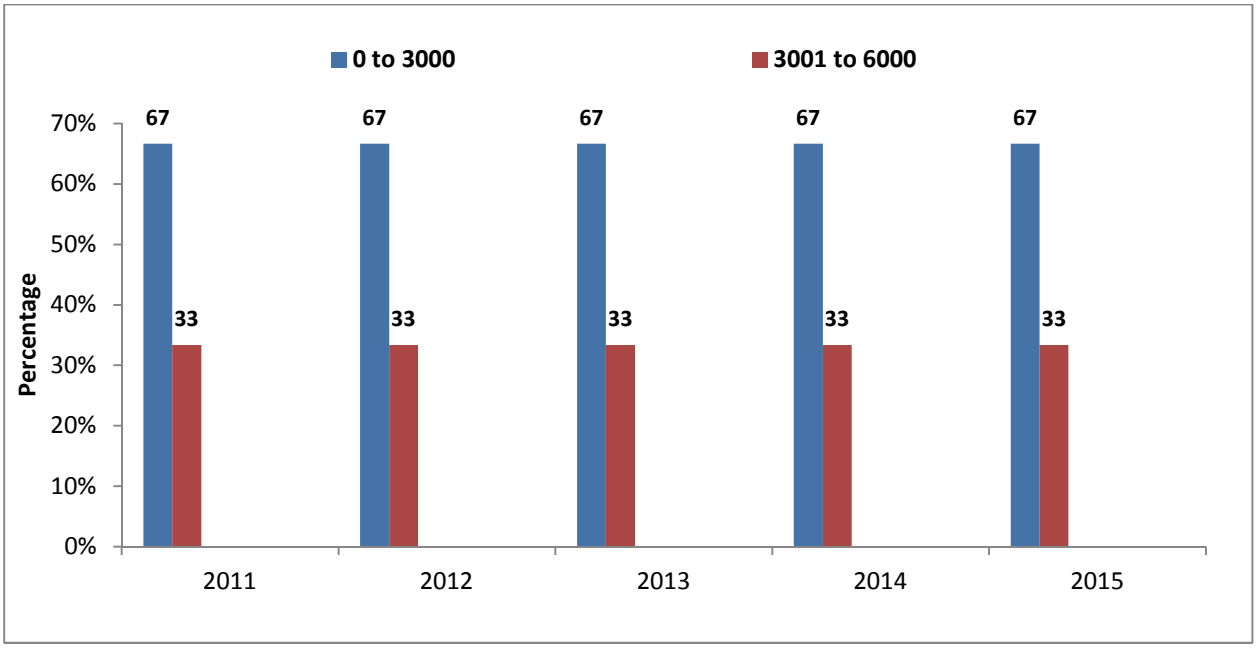

Figure 4.5: Farms Forecast Timber Production – Pine

Figure 4.5 shows the potential timber production for the five year period from 2011 to 2015. The data is presented in 2 ranges for each of the years. The ranges are: Range 1: 0 to 3000, Range 2: 3 001 to 6 000 tons. For example, the data presented in Figure 4.5 may be interpreted as follows:

The forecast for the 2011 Year

From the data presented 67% of the respondents will produce between 0 and 3 000 tons. 33% will produce between 3 001 to 6 000 tons. Figure 4.5 shows that there is no growth in the Pine timber production. Figure 4.2 indicated that 8% of respondents had Pine plantations. The Pine farmers could be converting their Pine plantations to Gum or Wattle plantations due to the decrease in the demand for Pine wood chips.

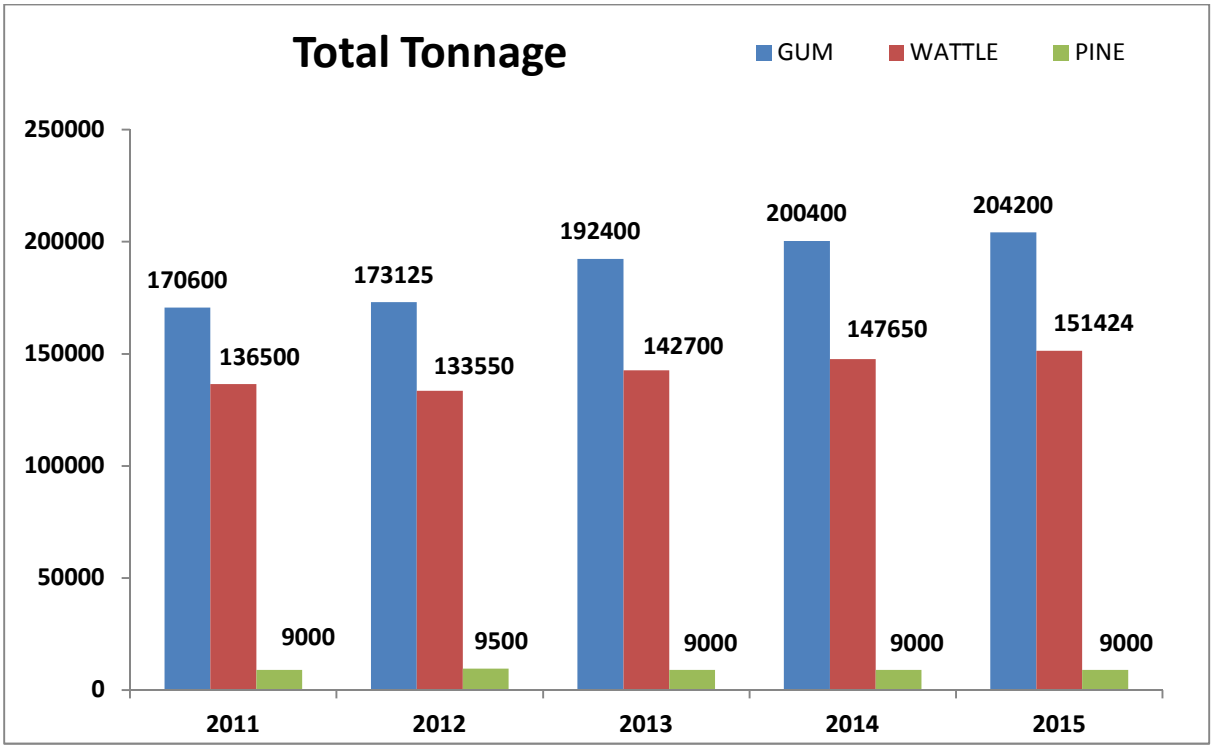

Figure 4.6: Forecast Tonnage Available

Figure 4.6 shows the potential timber production for the five year period from 2011 to 2015. The data is presented in the three species namely 1) Gum, 2) Wattle and 3) Pine. For example, the data presented in Figure 4.6 may be interpreted as follows:

The forecast for the 2011 Year

It is evident from the data presented that respondents will produce 170 600 tons of Gum, 136 500 tons of Wattle and 9 000 tons of Pine.

Respondents were asked to indicate their potential timber production tonnage forecasted for the next five years. The results showed that the tonnage for gum had a steady increase year on year. Between the years 2011 to 2015 the percentage of gum available has increased by 19.7%.The forecast for the 2011 year was 170 600 tons while the forecast for the 2015 year reflects 204 200 tons. This growth shows that the plantation stock of gum is increasing year on year. The tonnage for Wattle also had a steady increase year on year. Between 2011 and 2015, the percentage of wattle available has increased by 10.9%. The forecast for the 2011 year was 136 500 tons while the forecast for the 2015 year reflects 151 424 tons. This growth

shows that the plantation stock of Wattle is increasing. The Pine tonnage, however, seemed to be stagnant. Pine production was on average of 9 000 tons per annum. This could be that the demand for Wattle and Gum chips are increasing and that Pine farmers are converting their Pine plantations to Gum and Wattle plantations. This could also be due to the long period that Pine plantations take to grow. Sappi Saiccor and Mondi Merebank has closed the pine pulp lines. This is also a reason explaining why there is no growth in the Pine plantations and why the Wattle and Eucalyptus plantations are increasing. This increase in the plantation stock will make a significant contribution towards the economic growth by the processing of these trees for the export market as confirmed by the Department of Agriculture, Forestry and Fisheries (2009). The results confirm that the supply of Wattle and Gum is definitely forecast to grow until 2015.

4.2.3 Factors that Motivate Farmers to Continue Timber Farming

The third question asked: As a private grower what would you describe as a factor that would motivate you to continue timber farming? The aim of this question was to establish what factors would motivate farmers to continue farming. The responses are illustrated in Figure 4.7

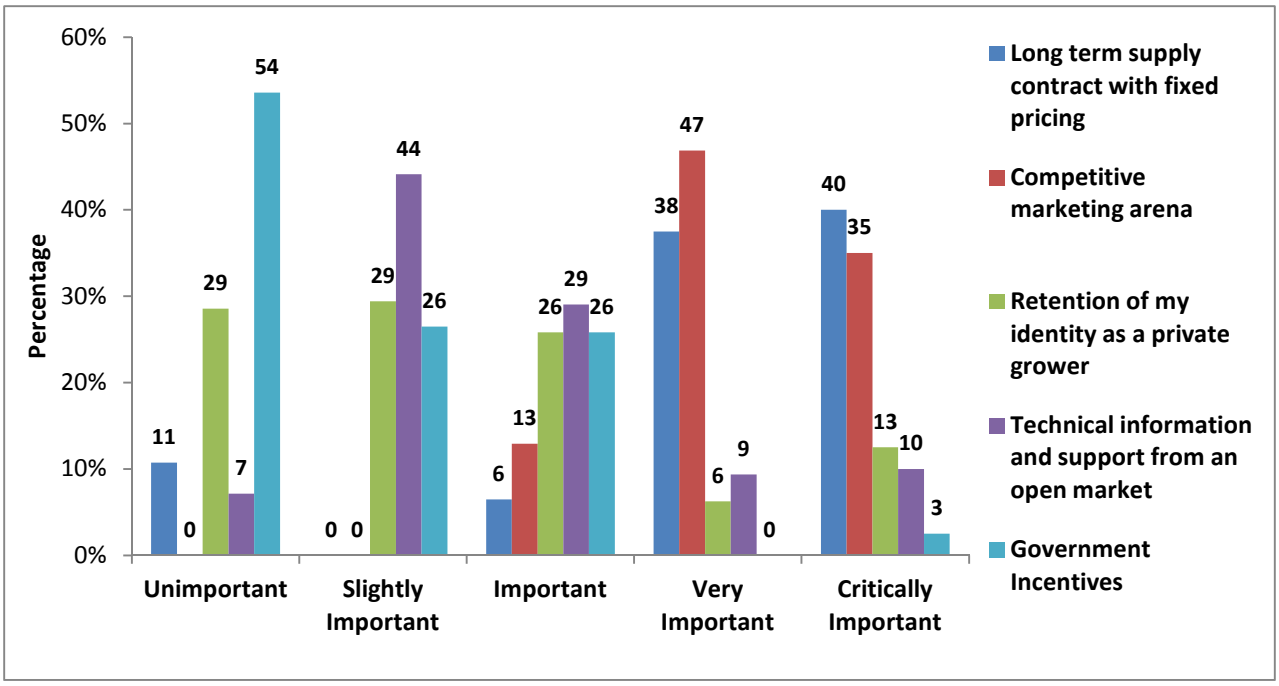

Figure 4.7: Factors that Motivate Timber Farming

Figure 4.7 shows the factors that motivate farmers to continue timber farming. The participants had to rate each factor according to a 5 point Likert scale. The scales used were unimportant, slightly important, important, very important and critically important. The factors were long term supply contract with fixed pricing, competitive marketing arena, retention of my identity as a private grower, technical information and support from an open market and government incentives. From the data gathered the results show the following.

Long term supply contract with fixed pricing

11% considered this factor unimportant, 0% slightly important, 6% important, 38% very important and 40% critically important.

Competitive marketing arena

0% considered this factor unimportant, 0% slightly important, 13% important, 47% very important and 35% critically important.

Retention of my identity as a private grower

29% considered this factor unimportant, 29% slightly important, 26% important, 6% very important and 10% critically important.

Technical information and support from an open market

7% considered this factor unimportant, 44% slightly important, 29% important, 9% very important and 10% critically important.

Government Incentives

54% considered this factor unimportant, 26% slightly important, 26% important, 0% very important and 3% critically important.

The results also show data concerning the main motivating factors that would motivate farmers to continue timber farming. The factors in total included, long term supply contract with fixed pricing, competitive marketing arena, retention of farmer's identity as a private grower, technical information and support from an open market and lastly government incentives. Most of the factors were acknowledged by the respondents, however the most dominant factors are discussed below, as these

factors depicted the most response from the participants. Each factor listed below provides additional insight on the challenges faced by Southern KZN farmers that impact on the stability and growth of private pulpwood production.

4.2.3.1 Long Term Supply Contract

The results showed that 38% of the population considered long term supply contracts as very important and 40% as critically important and 6% as important. This goes to show that overall, 84% of respondents rated long term supply contracts as significant and only 11% as unimportant. This relates to the fact that as a timber farmer a long term supply contract with fixed pricing meant that the farmer had a market for his timber. Being a member of NCT Forestry meant that all the farmers got the same price for their timber supplied. Numerous benefits would hence fall into the farmer's favour, some being:

- The farmer could plan ahead and find alternative methods to save costs.
- Stability whereby the farmer would have a steady stream of income.
- The farmer could provide employment and sustenance to all farm workers/employees.
- The farmer could use this income as a platform for acquiring more funding from various entities which could promote potential expansion of farms.
- The farmer could become a loyal supplier to NCT and could gain the benefit of stability and certainty.

4.2.3.2 Competitive Marketing Arena

The results showed that 47% of the population considered this factor as very important, 35% as critically important and 13% as important. This goes to show that overall, 95% of respondents ranked competitive market arena as significant. The respondents, being members of NCT Forestry Co-operative, were hence enabled to achieve competitive prices for their timber. NCT Forestry marketed timber for the private and independent farmers internationally by the sale of wood chips. Competitive international prices were hence earned by NCT. Being a co-operative, the benefit of these prices is passed to the member by receiving higher prices for the timber supplied. As mentioned in the Pulp and Paper Sector Summit Research Book (Naledi, 2005), NCT acts as an agent for members and processors and negotiates prices on behalf of its members. Overall, it is clear based on the responses that competitive marketing arena fully supports the increase in pulpwood production in Southern KZN namely Wattle and Gum.

4.2.4 Timber Markets Served

The fourth question asked: Which timber markets do you serve? The aim of this question was to establish which timber markets the timber farmer supplies his timber to. The responses are illustrated in Figure 4.8

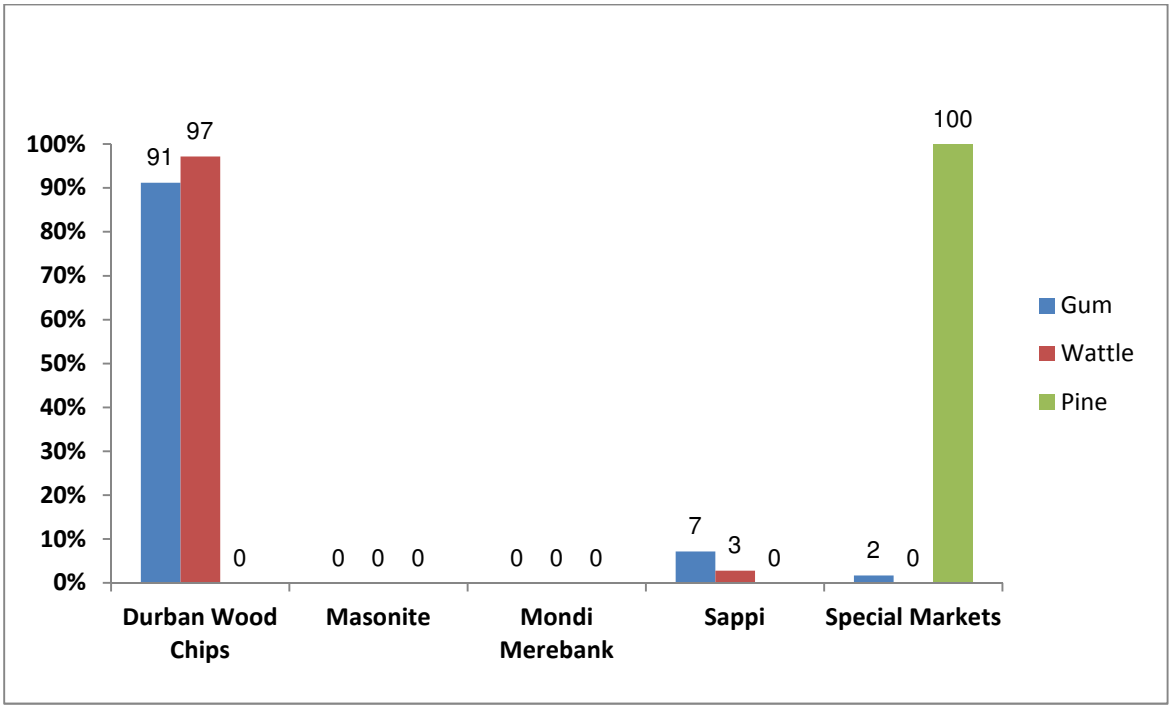

Figure 4.8 Timber Markets Supplied

This graph represents which timber market the timber farmer's supply. From the responses gathered 91% of Gum production is supplied to Durban Wood Chips, 7% to Sappi and 3% to Special Markets. 0% is supplied to Masonite and Mondi Merebank. 97% of Wattle production is supplied to Durban Wood Chips and 3% is supplied to Sappi. 0% Wattle is supplied to Masonite, Mondi and special markets. 100% of Pine production is supplied to Special Markets. These markets could include sawn timber and wood pellets.

Results for which timber markets were served by the respondents were also analysed. The results reflected that 97% of respondents were producing wattle and 91% of respondents were producing gum and this was supplied in its entirety to Durban Wood Chips. It is evident for these two species that although most of the timber is sent to Durban Woods Chips a very small percentage of that timber seemed to be sent to Sappi Saiccor. This could be due to the reason that timber was supplied to Sappi on a NCT delivery note and could be construed as a delivery to Durban Wood Chips. NCT Forestry and Sappi Saiccor has a swop agreement whereby farmers closer to Sappi would deliver to Sappi and Sappi would deliver to Durban Wood Chips depending on the distances from the farms. This is cost

effective for the farmer as they will save on transport costs. As mentioned by Goately (2009) the prospect of improving efficiencies and reducing costs in round log timber supply chains is invaluable as the timber industry transports approximately 14 million tons per annum. NCT Forestry has swop agreements with Sappi Saiccor and with Masonite. All respondents (100%) that did produce small amounts of pine (9000 tonnes) collectively were supplying to special markets. These markets could include sawn timber and wood pellets. The reasons for supplying these special markets can definitely be affiliated to the fact that Sappi Saiccor and Mondi Merebank have shut down their Pine pulp production lines leaving the farmers no choice but to supply these special markets in order to obtain income profits on their already limited Pine production.

4.2.5 Reasons for the Chosen Market

The fifth question asked: What are the dominant reasons for the chosen markets? The aim of the question was to understand why the farmers chose to supply specific markets. The responses are illustrated in Figure 4.9

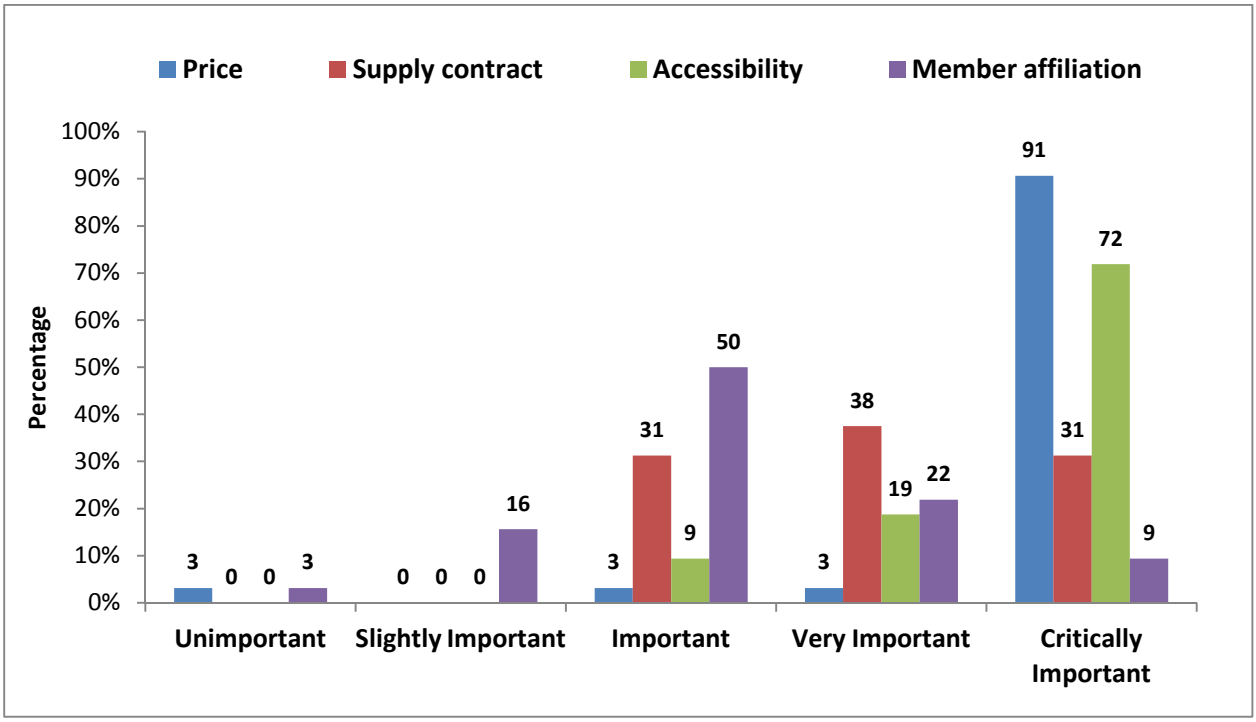

Figure 4.9 Dominant Reasons for the Chosen Markets

Figure 4.9 represents the reasons that farmers supply their chosen markets. The participants had to rank each reason according to a 5 point Likert scale. The scales used were unimportant, slightly important, important, very important and critically important. The factors were price, supply contract, accessibility, member affiliation and other. The responses gathered through the questionnaire are shown in Figure 4.9 and discussed below.

Price

3% considered this factor unimportant, 0% slightly important, 3% important, 3% very important and 91% critically important.

Supply Contract

0% considered this factor unimportant, 0% slightly important, 31% important, 38% very important and 31% critically important.

Accessibility

0% considered this factor unimportant, 0% slightly important, 9% important, 19% very important and 72% critically important.

Member Affiliation

3% considered this factor unimportant, 16% slightly important, 50% important, 22% very important and 9% critically important.

Other

The respondents were given the opportunity to select other reasons, specify them and rank these reason. Three respondents selected other and specified cheaper transportation costs as a dominant reason. The three respondents ranked transportation costs as follows: 1 important, 1 very important and 1 critically important.

The responses for the dominant reasons for the chosen market were analysed. The reasons listed on the questionnaire included price, supply contract, accessibility and member affiliation. The results showed that there were three most dominant reasons for the markets chosen by the respondents. These are discussed below.

4.2.5.1 Price

91% of respondents selected price as a critically important reason for the chosen market. As mention by Chamberlain et al., (2005) the wood chip market had achieved higher prices for plantation owners by successfully breaking the pricing monopoly of the large pulp plants in South Africa. With better prices the farmers were encouraged to replant after the trees are harvested and manage them better. Through better management the timber farmer could produce significant gains in productivity. Improved quality of timber and the improvement of productivity on these farms could enable the farmer to earn more income and expand in the future. KZN Top Business (2011), reports that the timber industry's future growth resided with the small scale timber growers.

4.2.5.2 Accessibility

72% of respondents selected accessibility as the 2nd most critically important reason for the chosen markets. This could relate to the fact that easy access, shorter travel distances and faster offloading times were key factors that helped the farmer save costs. The Durban Wood Chip mill had quick off loading times and easy access. The quick offloading times meant that the transporters did not have to follow long queues and have long waiting periods. Long waiting periods at mills for offloading could result in the vehicles not being able to make more trips and earn more income and reduce costs. The easy access to the Durban mill meant that the vehicles would travel shorter distances. Vehicles travelling through poor infrastructure like damaged roads, has high wear and tear and increased fuel consumption (Steyn & Bean, 2011). This could add more cost to farmer which the farmer is inevitably trying to avoid. The road infrastructure used to access the mill is of good quality therefore reducing the wear and tear of the transport vehicles and reduces fuel consumption.

4.2.5.3 Supply Contract

31% of the respondents rated this as critically important, 38 % as very important and 31% as important giving an overall importance rating of 100%. This again ties up to

the earlier results on long term supply contract with fixed pricing. As mentioned earlier, that a long term supply contract with fixed pricing meant that the farmer had a market for his timber and being a member of NCT Forestry resulted in all farmers getting the same price for their timber supplied. This came with benefits such as cost saving to farmer, stability of income, sustenance, expansion and so forth and so on.

4.2.6 Number of Years Farms will Continue to Produce Timber

The sixth question asked: How many more years do you envisage your farm will continue to produce the following types of timber? The aim of this question was to understand the longevity of timber farms. The responses gathered through the questionnaire are reflected in Figure 4.10.

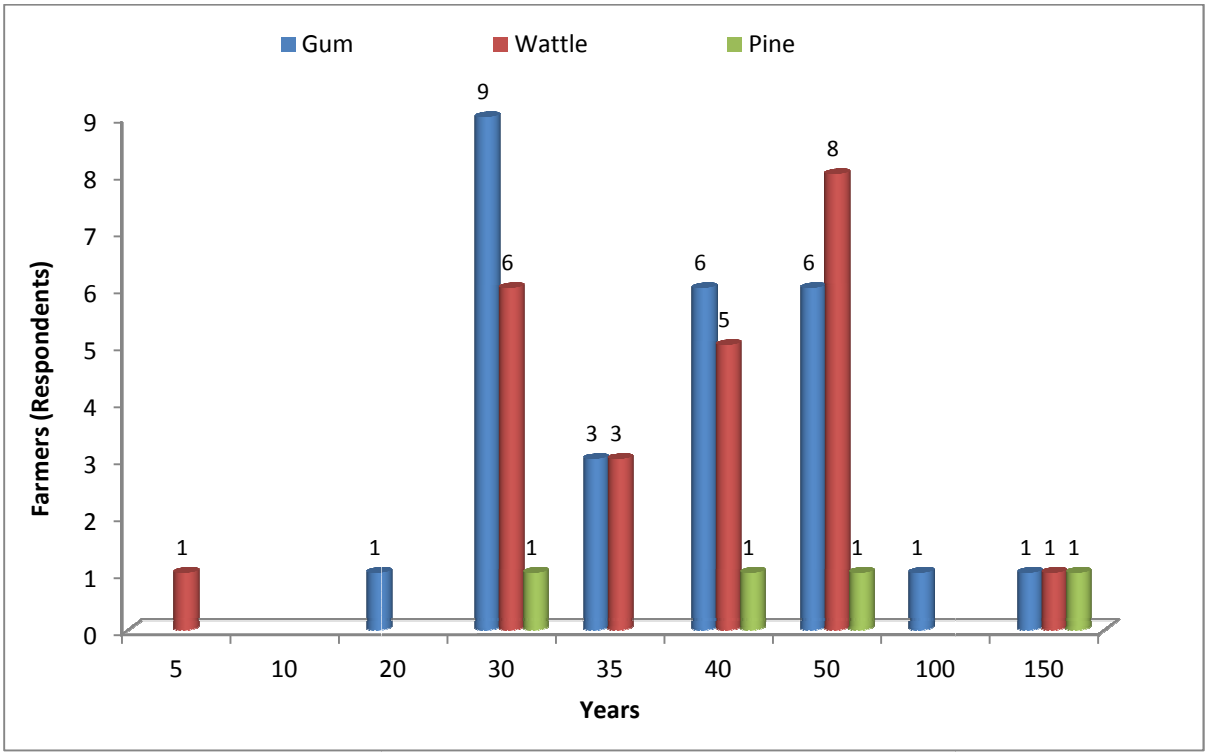

Figure 4.10 Number of Years Farmers will continue to Produce Timber

Figure 4.10 shows the number of farmers and how much longer they intend to continue producing timber. For Wattle, the respondents indicated that 1 farmer intended to continue farming for 5 years, 6 for 30 years, 3 for 35 years, 5 for 40 years, 8 for 50 years and 1 for 150 years.

For Gum, the respondents indicated that 1 farmer intended to continue farming for 20 years, 9 for 30 years, 3 for 35 years, 6 for 40 years, 6 for 50 years, 1 for 100 years and 1 for 150 years.

For Pine, the respondents indicated that 1 farmer intended to continue farming for 30 years, 1 for 40 years, 1 for 50 years and 1 for 150 years.

Figure 4.11 shows how much longer farms will continue to produce the different species of timber in the hands of the current owner and his successor.

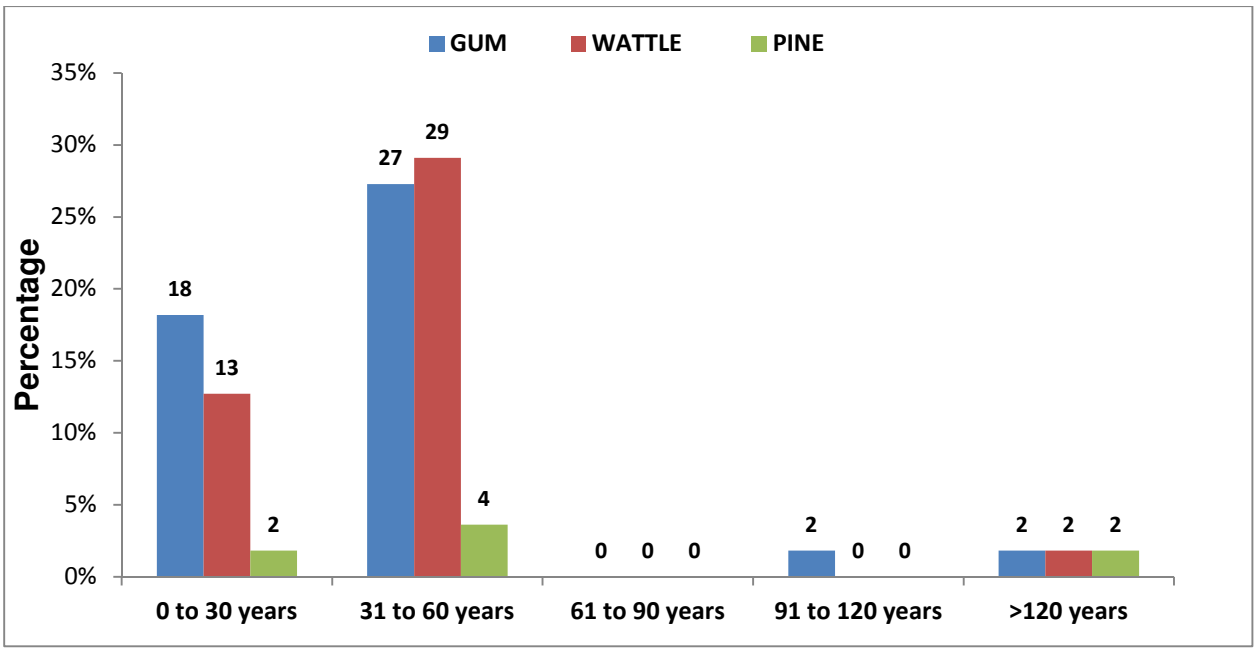

Figure 4.11 Number of Years Farms will continue to Produce Timber

The data gathered and illustrated in Figure 4.11 can be interpreted as follows. 18% of the total number of farms will continue producing Gum between 0 and 30 years. 27% will continue producing Gum between 31 and 60 years. 0% will continue producing Gum between 61 and 90 years. 2% will continue producing Gum between 91 and 120 years and 2% will continue producing Gum longer than 120 years.

13% of the total number of farms will continue producing Wattle between 0 and 30 years. 29% will continue producing timber between 31 and 60 years. 0% will continue producing timber between 61 and 90 years. 0% will continue producing

timber between 91 and 120 years and 2% will continue producing timber longer than 120 years.

2% of the total number of farms will continue producing Pine between 0 and 30 years. 2% will continue producing Pine timber between 31 and 60 years. 0% will continue producing Pine between 61 and 90 years. 0% will continue producing Pine between 91 and 120 years and 2% will continue producing Pine longer than 120 years.

The responses to the question on how many years the respondents could envisage the production of timber at their farms were concerning. This was a very critical question as the study partly revolved around the supply of pulpwood for now and the future. The results showed that 27% of respondents will continue to produce Gum between 31 to 60 years while 29% of respondents will continue to produce Wattle. This is a cause for concern as the number of years seems to be limited to 60 years. From the responses the results are clearly showing that beyond 60 years from now, 92% of timber farms will no longer exist, in Southern KZN. The concern builds on these results in the sense that what will the ramifications be if this is a micro-example of other parts of the country or even the world. Further questions that can be asked based on these responses include the following

- What would replace the trees?
- What happens to industries like NCT and other pulp wood related industries?
- What happens to timber based products?
- What happens to society in the absence of timber? And so forth.

Reasons for the poor sustainability rate can be numerous and varied. Reasons can be both from factors within or beyond our control. Reason within our control could include:

- Pests and Diseases;
- Fires;
- Land claims.

External or environmental reason could definitely be global warming, temperature and weather pattern change, fires, pests and diseases and so on. These go beyond the focus of the study but need to be investigated in future studies.

With regards to the factors within our control, farmers need to be given incentives to continue farming. One of the incentives could be the reduction or even exempt productive farms from municipal rates. According to Forestry South Africa's Rodger Godsmark (2010), the land used for forestry has declined. Forestry areas has reduced by 127 000 hectares between 1999 and 2009. This represented a 9.1% decrease in forested area. In South Africa, land available is 122.3 million hectares however forestry only uses 1% of this land. 68.60% of this land is used for grazing purposes (Godsmark, 2010). In KwaZulu-Natal the land area is 9.10 million hectares which is 7.5% of the total land area of South Africa. Forestry utilises 5.5% of the land in KwaZulu-Natal while grazing utilises 58.30% (Godsmark, 2010). If more land could be converted from grazing to forestry the availability of timber will increase. This would create more jobs and ultimately the economy will benefit.

4.2.7 Dominant Reasons for the Decline in Timber Production

The seventh question asked: What would you describe as the dominant reasons for the decline in timber production. The aim of this question was to understand what the main reasons are for the decline in timber production. The responses gathered are reflected in figure 4.12.

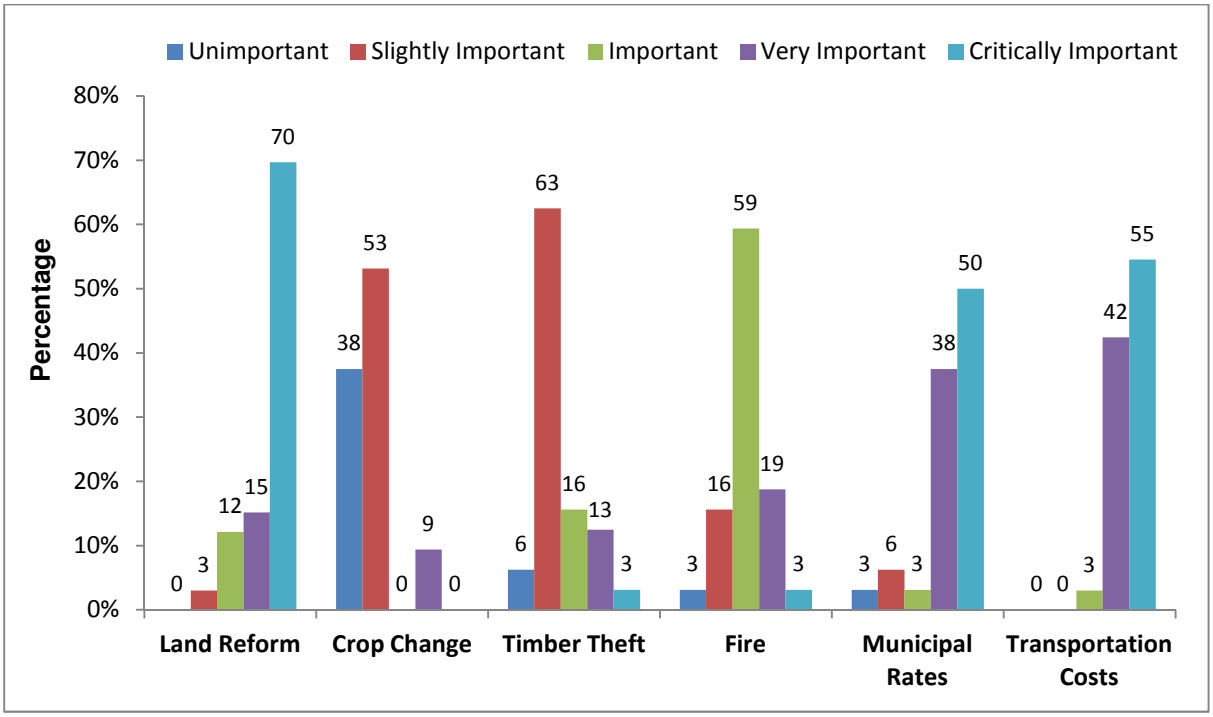

Figure 4.12 Dominant Reasons for the Decline in Timber Production

Figure 4.12 shows the dominant reasons for the decline in timber production. The participants had to rank each reason according to the 5 point Likert scale. The scales used were unimportant, slightly important, important, very important and critically important. The factors were land reform, crop change, timber theft, fire, municipal rates and transportation costs. The data gathered and illustrated in Figure 4.12 can be interpreted as follows.

Land Reform

0% considered this factor unimportant, 3% slightly important, 12% important, 15% very important and 70% critically important.

Crop Change

38% considered this factor unimportant, 53% slightly important, 0% important, 9% very important and 0% critically important.

Timber Theft

6% considered this factor unimportant, 63% slightly important, 16% important, 13% very important and 3% critically important.

Fire

3% considered this factor unimportant, 16% slightly important, 59% important, 19% very important and 3% critically important.

Municipal Rates

3% considered this factor unimportant, 6% slightly important, 3% important, 38% very important and 50% critically important.

Transportation Costs

3% considered this factor important, 42% very important and 5% critically important.

The respondents also ranked the dominant reasons for the decline in timber production. The factors in total included, land claims, crop change, timber theft, fire and transportation costs. All of the factors were acknowledged by the respondents, however the most dominant factors are discussed below, as these factors depicted the most response from the participants. Each factor discussed below provides additional insight on the dominant reasons for the decline in timber production that impact on the stability and growth of private pulpwood production.

4.2.7.1 Land Reform

Land reform does not affect all farmers in Southern KwaZulu-Natal. The area that was affected was the Eston Area. The majority (70%) of the respondents considered this as the most critically important reason for the decline in timber production. There was lots of uncertainty concerning land reform. Through this uncertainty the farmer neglects the affected area resulting in lower yields. If the farmer was under the impression that his farm was going to be affected by land reform then the farmer may harvest the existing timber and does not have a great incentive to replant the areas harvested. Land reform takes a long time to be settled and could run into years. During that period the farm is unproductive. According to Lahiff (2008) the land reform programme is in difficulty and has failed to reach its targets. Productive farms that have been redistributed have become unproductive. This could be because of the lack of skill by the recipients. The potential impact of land claims (and

redistribution) on the forestry industry and the knock-on effect that this may have on the forest products industry could be hugely detrimental. It is in everybody's interest that the restitution process be completed as quickly as possible and in a manner that is fair, transparent and above all, one that does as little damage to the future sustainability of forestry.

4.2.7.2 Transportation Costs

The results showed that 42% of the population considered transportation costs as very important and 55% as critically important and 3% as Important. This goes to show that all respondents ranked transportation costs as important to some degree. Rail transport has become more expensive and the demise of the branch lines has necessitated the use of road transport. As mentioned by King (2011) only profitable rail infrastructure is utilised while the branch lines in the rural areas are not used and becoming dilapidated. Due to the demise of the rail network, there has been a boom in road transport. There have been high truck volumes travelling through rural roads. These high volumes of trucks damage the road infrastructure. The damaged infrastructure has increased company logistics costs considerably by the increase in maintenance and repair costs caused by the deteriorating road quality (Steyn & Bean, 2011).

4.2.7.3 Municipal Rates

The results showed that 50% of the population considered municipal rates as very important and 38% as critically important and 3% as important. This goes to show that only 9% ranked municipal rates as unimportant. Municipal rates affect all farmers. According to Forestry South Africa's Annual Report (2011), the rate applicable to farm land is too high and has approached the Minister of Provincial and Local Government to have this matter addressed.

4.2.8 Factors affecting Private Timber Production in the Future

The eighth question asked: What do you believe will be the most challenging factors affecting private timber production in the future? The aim of this question is to understand what the factors are that will affect private timber production in the future. The responses gathered through the questionnaire are reflected in Figure 4.13.

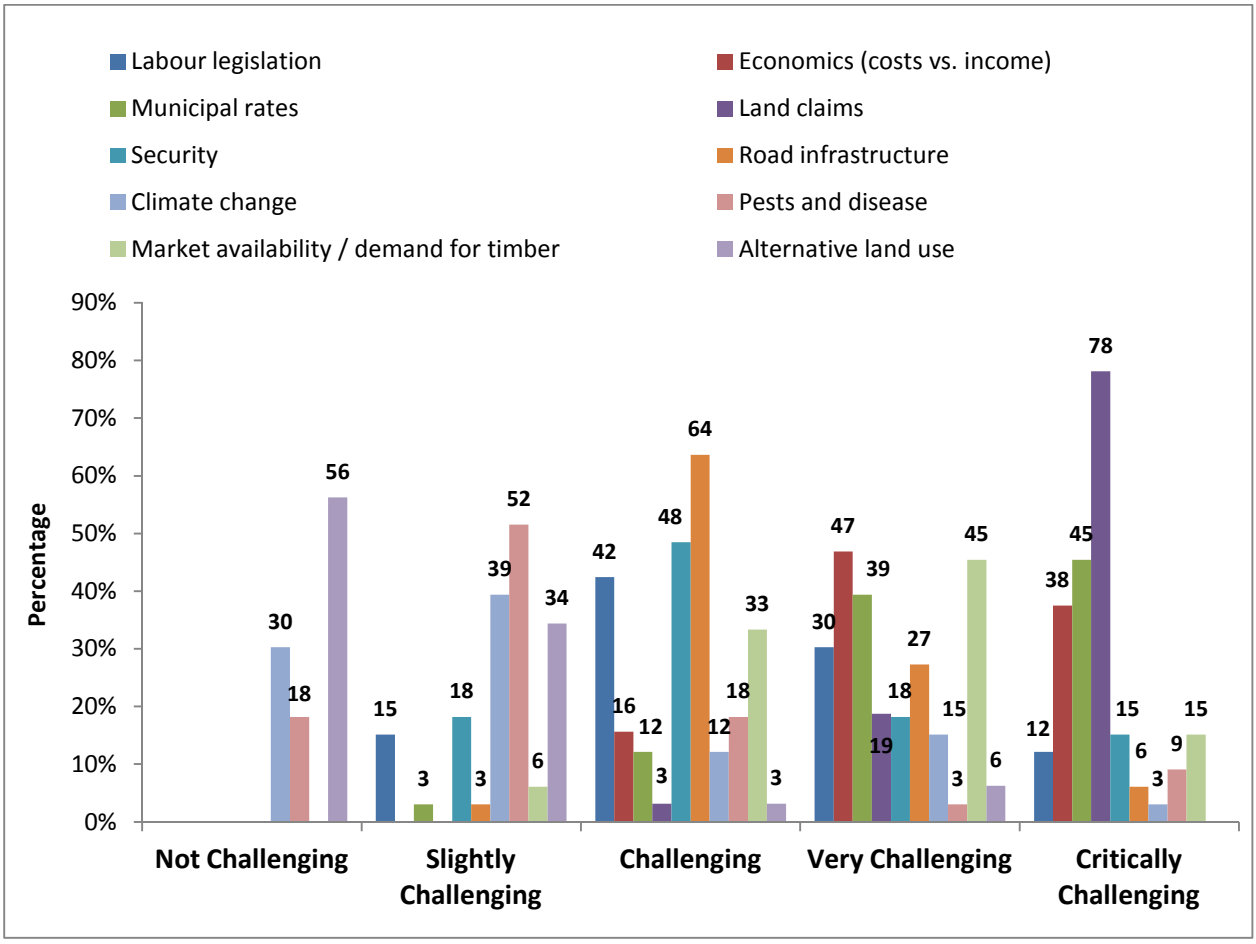

Figure 4.13: Challenging Factors Affecting Timber Production

Figure 4.13 represents the most challenging factors affecting private timber production into the future. The participants had to rank each reason according to the 5 point Likert scale. The scales used were not challenging, slightly challenging, challenging, very challenging and critically challenging. The factors were labour legislation, municipal rates, security, climate change, economics (cost vs income), land claims, road infrastructure and pests and disease. The data gathered and illustrated in Figure 4.11 can be interpreted as follows.

Labour Legislation

15% considered this factor slightly challenging, 42% challenging, 30% very challenging and 12% critically challenging.

Municipal Rates

3% considered this factor slightly challenging, 12% challenging, 39% very challenging and 45% critically challenging.

Security

18% considered this factor slightly challenging, 48% challenging, 18% very challenging and 15% critically challenging.

Climate Change

30% considered this factor not challenging, 39% slightly challenging, 12% challenging, 15% very challenging and 3% critically challenging.

Economics (Cost vs Income)

16% considered this factor challenging, 47% very challenging and 38% critically challenging.

Land Claims

3% considered this factor challenging, 19% very challenging and 78% critically challenging.

Road Infrastructure

3% considered this factor slightly challenging, 64% challenging, 27% very challenging and 6% critically challenging.

Pest and Diseases

18% considered this factor not challenging, 52% slightly challenging, 18% challenging, 3% very challenging and 9% critically challenging.

The respondents also ranked the most challenging factors affecting private timber production into the future. The factors in total included, labour legislation, municipal

rates, security, climate change, economics (cost vs income), land claims, road infrastructure and pests and diseases. All of the factors were acknowledged by the respondents, however the most challenging factors are listed below, as these factors were ranked as the most significant. Each factor listed below provides additional insight on the most challenging factors affecting private timber production into the future that, in turn, impact on the stability and growth of private pulpwood production.

The results for land claims showed that 19% of the population considered land claims as very challenging and 78% as critically challenging and 3% as challenging. This goes to show that the overall importance rating was 100% collectively. As noted in the literature review (section 2.5.1) on discussion under land reform, farmers believe that land reform is a stumbling block that affects the production of timber. The uncertainty and the long resolution periods have resulted in farms being neglected. The affects of this neglect will be felt a few years later when the land is unproductive.

The results for municipal rates showed that 39% of the population considered municipal rates claims as very challenging and 45% as critically challenging and 12% as challenging. This goes to show that only 4% ranked municipal rates as unimportant. As noted in the literature review (section 2.5.4) on discussion under municipal rates, Forestry South Africa is of the view that the rate applicable to farm land was too high and has approached the Minister of Provincial and Local Government to have this matter addressed.

4.2.8.1 Road Infrastructure

The results for road infrastructure showed that 27% of the population considered road infrastructure as very challenging and 6% as critically challenging and 64% as challenging. This goes to show that the overall importance rating was 97% collectively. The demise of the branch lines of the rail network has increased the amount of freight carried on road transport which has caused the fast deterioration of the infrastructure on which this freight is carried (Steyn & Bean, 2011). This deterioration of the road quality has increased company logistics costs by the

increase in maintenance and repair costs. Goately (2009) states that the main contributor to South Africa's deteriorating road infrastructure is overloading. Van Zyl (2010) explains that overloading causes accelerated road deterioration which, together with inadequate vehicle maintenance, driver fatigue and poor driver health, contributes significantly to South Africa's poor road safety record.

4.2.8.2 Economics (Cost vs Income)

The responses to economics (cost vs income) as a factor showed that 47% of the population considered economics (cost vs income) claims as very challenging and 38% as critically challenging and 16% as challenging. This goes to show that all respondents ranked economics (cost vs income) as challenging to some degree. Cash flow is an important factor for the survival of the farmer as timber farming is very capital intensive. Due to the long rotation periods of timber, the farmers have long waiting periods before income is earned. Contractors were used by timber farmers to do the planting, harvesting and transporting for the farmer. Farmers generally do not have their own transport as it is capital intensive and not cost effective and therefore it is cheaper to use contract transporters. Timber harvesting was also very labour intensive as it involves many people in all aspects of the operation. The benefit of timber farming was that the crops can be harvested at any stage. If the timber price was low then the timber can be left until the price has increased. There is also no specific season that farmers need to harvest, you can harvest on demand. Fire is a major threat to farming therefore large sums of money need to be spent on fire fighting equipment and firebreaks have to be burnt every year at the beginning of winter to prevent huge fires from destroying the crops.

4.2.8.3 Demand for Timber

The ranked responses for demand for timber showed that 45% of the population considered market availability as very challenging and 15% as critically challenging and 33% as challenging. This goes to show that only 7% ranked demand for timber as not challenging. Some parts of the country have experienced a shortage of timber as mentioned in the Forestry Roadmap 2030 (2009). This shortage will have an unfavourable effect on the sustainability of pulp and paper operations, local

sawmilling and therefore pose a threat to employment opportunities and the local economy. Fewer hectares have been replanted and the effects of this will be felt in a few years time (Thompson, 2008). The export of wood chips has been increasing from Durban. During and Whales (2009) are also of the view that the export market for pulp and paper is strong. With the reduction of the land area available for timber plantations there will always be a demand for wood chips.

Future pulpwood production will be hampered by the land claims, municipal rates, road infrastructure, economics and market availability. The respondents are of the view that finality has to be reached concerning land claims and this will encourage farmers to continue replanting trees for the future. The respondents were also of the view that incentives such as the reduction of rates or even the exemptions of rates for productive farms are required. The road infrastructure has been destroyed due to the demise of the rail branch lines. Contractors were used by farmers for the transportation of the timber to the mills as it was not cost effective for some farmers to have a fleet of transport vehicles. Due to the contraction of the farming area available there is a threat to the supply of wood chips.

4.3 Conclusion

The information and data that was gathered through the questionnaire are presented and discussed in Chapter 4. Information was gathered to examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal and the challenges faced by the private pulpwood farmers.

48% of respondents had Gum plantations while 44% had Wattle plantations. Wood chips mills export Wattle and gum wood chips only to the international pulp and paper mills. Wattle, being a much harder species takes longer to grow and has better yields than Gum. Pine plantations account for 8% of the respondents. Pine trees take longer to grow and are harvested between 20 and 25 years, and are used predominantly in the furniture industry. This is a one of the key reason why Pine seemed to be less of a plantation priority for the timber farms.

The results showed that between the years 2011 to 2015 the percentage of gum available has increased by 19.7%.The forecast for the 2011 year was 170 600 tons while the forecast for the 2015 year reflects 204 200 tons. The percentage of wattle available has increased by 10.9%. The forecast for the 2011 year was 136 500 tons while the forecast for the 2015 year reflects 151 424 tons. Pine production was 9 000 tons per annum. The results also reflected that the main motivating factors included, long term supply contract with fixed pricing, competitive marketing arena, retention of farmer's identity as a private grower, technical information and support from an open market and lastly government incentives. It was clear based on the results that these factors fully support the increase in pulpwood production in Southern KZN namely Wattle and Gum. The results reflected that 97% of respondents were producing Wattle and 91% of respondents were producing Gum and this was supplied in it's entirety to Durban Wood Chips. Durban Woods Chips held the monopoly for these two species. The responses for the dominant reasons for the chosen market were analysed. The reasons listed on the questionnaire and discussed in this chapter included price, supply contract, accessibility and member affiliation.

In terms of the longevity of timber farms and how many years the respondents could envisage the production of timber at their farms, the results were analysed quite closely. This was a very critical question as the entire study partly revolved around the demand for pulpwood for now and the future. The results showed that 27% of respondents will continue to produce Gum between 31 to 60 years while 29% of respondents will continue to produce Wattle. This was a cause for concern as 92% of timber farm respondents do not plan to produce beyond 60 years. Internal and external factors were discussed with regards to this. Dominant challenges to timber production included, land claims, crop change, timber theft, fire and transportation costs. The most dominant factors were land reform, transportation costs and municipal rates. The factors concerning the most challenging factors affecting private timber production into the future included, labour legislation, municipal rates, security, climate change, economics (cost vs income), land claims, road infrastructure and pests and diseases. The most challenging factors were land claims, road infrastructure economics (cost vs income) and demand for timber.

These topics will be discussed further in chapter 5 through the discussion of the qualitative data gathered from the interviews.

CHAPTER 5

Qualitative Discussions on Private Pulpwood Production in Southern KwaZulu-Natal

5.1 Introduction

Interviews were conducted with three key players at NCT Forestry Co-operative Limited. These interviewees were the Group General Manager, Assistant General Manager and Procurement Manager. The interview with the General Manager and the Assistant General Manager was done together. The interview consisted of 8 structured questions and 8 follow-up questions to the Logistics Manager. These questions pertained more to the challenges faced by timber farmers from the interviewee's perspective. It also focused on establishing if timber supply was increasing or decreasing in Southern KZN. The aim of the interviews was to substantiate and further understand the results from the questionnaires that were sent out to the respondents from the quantitative side and to get a holistic view from the three interviewees that are involved in the timber industry on a daily basis as well as to gain insights from their long-term experience in this industry. The interview was also a critical means to fulfil the study objectives.

5.2 Interviews with key players at NCT Forestry Co-operative Limited

5.2.1 Future Supply of Wood Chips

The interviewees were asked to outline and describe significant change in pulpwood supplies from suppliers in Southern KZN on a yearly basis. The Logistics Manager indicated that while there was not a significant change to pulpwood supplies, the most critical aspect was that markets continued to recover from recent global difficulties. This, to a limited extent, was improving the volumes harvested on farms.

The General Manager and Assistant General Manager indicated that Bainesfield farm will start maturing. Bainesfield is a farm that was leased by NCT Forestry. Between 1999 and 2014, 3 400 hectares of pulp wood timber would have been planted. Smithii and Grandis (both being Gum species) has been supplied to the Durban Wood Chip mill from this plantation in the past and has future benefit to the Durban Mill. With an improvement in pulp yields and an MRI (mean ring Index) of 15 this farm will produce approximately 50 000 tons. With an MRI of 18 the plantation will produce approximately 60 000 tones. The Assistant General Manager stated that the most robust and stable supply of timber was from NCT Tree Farming. This was more reliable and beneficial to the Durban Wood Chip mill. The General Manager mentioned that small steps have been taken to ensure the stability of timber supply through the joint venture partnership with Freewheel. Freewheel is a partnership between the Japanese client Hokuetsu Kishu Paper and NCT Forestry Co-operative. The General Manager and Assistant General Manager explained that Freewheel had purchased a farm called Etterby and purchased a further 2 more farms in the Greytown area. The timber produced from these farms will go to the Durban Wood Chip mill.

It was quite clear that NCT Forestry is taking the necessary steps to improve the availability of timber by investing in farms through partnerships, leases and through NCT Tree Farming. Better maintenance and specie selection were efforts that have been made to improve yields on these farms. Furthermore, all the timber from the new acquisitions was destined for the Durban Wood Chip mill. This shows that the availability of timber can be improved to meet export demand.

5.2.2 Challenges faced by Private Pulpwood Farmers

The interviewees were also asked to give their views on the most challenging issues that the private South African timber grower had to deal with. The Logistics Manager conveyed that the availability of productive labour and the impact of urbanisation plus the impact of HIV and AIDS on rural communities in conjunction with land claims was a major challenge.

The General Manager mentioned that transport costs have increased considerably as compared to 5 years ago. Durban had a shorter travelling distance and this is a positive for the Durban Wood Chip (DWC) mill. Due to Richards Bay being a long distance away from Durban and it became too expensive to transport the timber from Durban to Richards Bay. Previously farmers from the Richmond area could send their timber by rail to Richards Bay. These rail lines in Richmond are now closed and the other alternative was to use road transport. Timber had been road hauled from places that had only used rail transport in the past. The General Manager stated that transport cost was the most prominent issue that the timber farmer has to face. The General Manager mentioned that the land claims is talked about by everybody but actually only affects a few. The land claims affected some farmers in the Eston area. The General Manager did mention that he felt that the land claims is not as big an issue as it is made out to be. The Assistant General Manager mentioned that farmers didn't manage their farms as they used to 10 to 15 years ago because of the fear that their land was going to be taken away as part of the land claims. NCT was playing a role in trying to change that mindset of the farmers. The General Manager said that property rates and paying for water levies was another challenging issue that the farmers had to deal with. The General Manager did mention that property rates was a wasteful expenditure for farmers as they paid for it every year and it increased every year and they didn't see any benefit from it.

The increased transport cost was a variable that had little control by the farmers. The option of using rail was no longer existent due to the fact the rail lines had been closed. The rail network had not been maintained resulting in timber farmers using road transport. The excess use of road transport meant that the road network gets damaged and becomes more expensive to maintain. The factors mentioned by the General Manager and Assistant General Manager being transport costs, municipal rates and land claims are the most challenging factors that the farmers have to deal with. These factors were also rated overall as important by the 33 respondents that answered the questionnaire.

5.2.3 Members Loyal to NCT

The interviewees were asked to give their views on the key reasons for some members remaining loyal to NCT. The Logistics manager conveyed that the co-operative structure of NCT was an excellent fit with the private farmer's modus operandi, personalised service, and the ability of NCT to continually evolve and develop new markets for the private farmer's timber. In addition, an excellent track record and prudent management style has made NCT market leaders and often price setters in the industry.

The General Manager and Assistant General Manager indicated that within the membership of NCT there was a spectrum from a very loyal member to a very fickle member and everything in between. In certain areas, however, there were members whom have been abused by companies in the past. When there is a buyer's market you will find that the loyal members come to the fore. This was evident when the Durban Wood Chip mill was started and at that stage the members could have went to Sappi Saiccor and got and extra R30 to R40 Rand a ton more. This was a huge percentage difference and the farmers loyal to Durban Wood Chip took a reduced price for many months. The Assistant General Manager mentioned that when the Durban mill was built there was a flood of timber waiting to be supplied to the Durban mill despite Sappi Saiccor being present and that it was quite gratifying to see that the right thing was done at the right time by NCT for its members.

The Durban mill was built as an outlet for farmers from Southern KZN. This was a saving for members in itself as the timber did not have to be sent to Richards Bay. The members had a sense of ownership of the Durban mill and therefore continue to supply this mill.

5.2.4 Members Non-loyal to NCT

The respondents were asked to give their views on the key reasons that some suppliers tend to "play the field" (non-loyal to NCT) in terms of marketing their pulpwood. The Logistics Manager responded that cash flows and influence from

other marketing agents or corporate institutions persuaded the farmers to supply other mills. Suppliers may have more timber than NCT can use in any given month and one understands that sometimes you do not want to have all your eggs in one basket. Furthermore, the General Manager and Assistant General Manager responded that farmers inherit existing contracts when they purchase farms and therefore have to fulfill the contractual obligations.

The financial needs of farmers were important. The farmer's cash flow needs necessitated the need to supply other mills if the Durban mill could not accept all the timber deliveries at a specific time. The Durban mill being in the Port of Durban has space constraints. Excess stock cannot be stored due to the lack of space. The shed has limited capacity. When the shed was originally designed, it was built to accommodate wood chips to fill 2 ships. With the ships sizes increasing over time the storage shed can only accommodate wood chips for 1.5 ships.

5.2.5 Strength

The interviewees gave their views on what is DWC's biggest strength. The Logistics Manager responded that DWC had a flat, functional structure that allows for decisive decision making and quick implementation. The General Manager and Assistant General Manager mentioned that the position of the Durban mill was the greatest strength and being closer to the Midlands than Richards Bay enabled the farmer to save transport costs. The idea and the concept of the Durban mill were born from the needs of NCT members. There was no wood chipping mill in Southern KZN. The members had a sense of ownership of the mill. The idea was conceptualised by the farmers and the directors and therefore it worked very well. The mill has never been short supplied and stands up to the competition from Sappi Saiccor.

The position of the Durban Wood Chip mill was a plus factor for the members of NCT. The saving on transport cost both for the farmer and for the mill was instrumental for the cash flow of the farmer. These savings could be used by the farmers to expand their farming area.

5.2.6 Weakness

The interviewees were asked: What in your opinion is DWC's biggest weakness? The Logistics Manager responded that the rateable supply to markets could be considered as a weakness. NCT does not "enforce" supply planning into markets. Because of the co-operative nature of NCT, NCT was perhaps too lenient on variations in supply and this impacts significantly on costs in the supply chain and the market.

The General Manager and Assistant General Manager commented that the truck handling could be considered a weakness. The DWC mill is located at Maydon Wharf which is in the port area and there was limited access. At times there were huge frustrations among farmers and at other times it is perfect for just in time deliveries. Not giving preference to farmers whom have booked on the Joint Planning System (JPT) to deliver at a specific time, due to space constraints, was not managed well. The booking system was not enforced and therefore caused frustrations and anger amongst members and transporters. This could erode the loyalty the members had towards DWC. Storage is another weakness. More land could be leased from the port, however, with more storage space comes more cost and one must look at the cost effectiveness of the extra storage space.

Space was a constraint in the Durban port area which resulted in the port charging exorbitant rates for the lease of land. The demise of the rail network and the increased cost of rail has resulted in the increase of road transport. The inflow of trucks bringing products such as wheat and maize for export purposes causes huge congestions in the port area. The management and use of the JPT system (if space was available) would ease the frustrations of the farmers and transporters.

5.2.7 Key Threats

The interviewees were asked: What in your opinion are the key threats that influence the production of pulpwood in Southern KZN? The Logistics Manager responded that

the re-allocation of land (land claims) without skills transfer and the availability of farm labour was a key threat to pulpwood production.

The General Manager and Assistant General Manager responded that the land issue was a threat to pulpwood production in the North. Communities took over farms and within 2 years there was nothing on those farms due to the communities not replanting. This has happened in the South but has not affected the supply of pulp wood from Sothern KZN. If a farm was going to be a casualty of the land claims, one would find that there was an increase in the flow of timber from that farm however the impact was felt later as no further tree planting and management would take place on that farm. Biofuels was a potential threat for pulpwood production but not in Southern KZN. Community development could be another threat. For example, plantation land could be converted to low cost housing or conversion to other land uses. Southern KZN is pulpwood terrain, which supports Sappi Saiccor, Mondi Merebank and Durban Wood Chips. Other threats could be pests and diseases. Tree breeders and geneticists are constantly researching ways to combat and eradicate pests and diseases. Fire was always a threat but through good management this threat can be minimized. The effects of global warming and the effect on timber farming, needs to be further studied. The strong Rand also affected the export of wood chips. If the rand was too strong then it would not be cost effective to export wood chips. Land claims, community development, pests and diseases and fires were key threats.

5.2.8 Driving Forces

The respondents were asked to give their views on the driving factors that kept timber farmers in the business despite the challenges they face daily. The Logistics Manager responded that it is the quality of life and that for many farmers it was in the family.

The General Manager and the Assistant General Manager responded that when you get farmers that are exiting the business there was always farmers that were consolidating their farms and purchased the farms from the farmers that want to exit.

NCT Tree Farming also managed farms from farmers whom wanted to exit. The farmers retained ownership of the farms and the management is done through NCT Tree Farming. The joint venture between Hokuetsu and NCT keeps the timber for the Durban mill. Due to the fact that wood chips were sold in US Dollars, it enabled the farmer to achieve higher rates during the time of Rand weakness. During the period of the strong Rand as it has been over the last 2 years, NCT negotiated with the Japanese clients to increase prices and vice versa. NCT has a lucrative market in Japan as NCT supplied 65% of the total wood chips exported to the Japanese paper Companies from South Africa (Figure 2.13). The Japanese client had investments in South Africa and the relationship with the client is long term. The proposed increase in the export levy of 18% was excessive and with the intervention of the Port Regulator the proposed increase would be in line with inflation and therefore will not affect the timber farmer. The availability of hardwood will increase in Southern KZN with the conversion from soft wood (Pine) to hard wood. This was done by Masonite a few years ago. Mondi and Sappi had closed down their pine sections. South of the Tugela there was no or very little need for soft wood. The Southern KZN pulpwood land area was gradually diminishing but through good management the yields were increasing in timber plantations. The increased yield would cater for the shortfall of land. The conversion from softwood to hardwood will also increase the production of pulpwood.

Although there were farmers that left the business there were always farmers who wanted to increase the number of farms they own and therefore increasing their volume of timber available. The more successful farmers who purchased other farms managed these farms well and therefore the yields from these farms increased. The Japanese were the largest wood chip buyers in the world and always look at long term sustainability. The exchange rate variations or volatility was counteracted by the price increase or decrease as agreed with the client. Although the pulpwood land area was diminishing there was an increase in the yield from the plantations through good management and specie selection.

5.2.9 Future Demand

With regards to the interviewee's view on whether the KZN Private Pulpwood farmers have the capacity to meet future wood chip export demands. The Logistics Manager responded, Yes. Private farmers were increasingly disillusioned by the corporate sector in the SA timber industry and look favourably on NCT. In addition, we were limited to some extent by the production capacities at our mills in terms of the total volume that we can export.

5.2.10 Effect of the Exchange Rate

A question was asked concerning the effect the exchange rate (strong Rand) would have on wood chip exports from Durban. The Logistics Manager responded that a stronger Rand would limit NCT's ability to increase Mill Delivered Prices (MDP) to private farmers. In the short term this resulted in some "banking" of timber (timber just not harvested but left to grow until the next rotation) but in the long term this timber would still flow through the co-operative.

5.2.11 Future Export to other Countries

The interviewee was asked to give his views on whether he envisaged exporting to other countries besides Japan in the next 5 years. The Logistics Manager responded that if they were to grow their volumes and also develop some exposure other than Japan then yes, definitely.

5.2.12 Effect of the Proposed Export Levy Increase

The interviewee was asked a question on how the proposed increase in export levies for Wood Chip exports would affect the timber farmers in Southern KwaZulu-Natal. The Logistics Manager responded that it would affect them in as far as the mill delivered prices would be limited accordingly.

5.2.13 Effect of the Bio Fuel Market

A question was asked on whether the demand by the Bio fuel market (wood pellet) will affect the availability of the timber resource. The Logistics Manager responded No, not unless government offered significant and extremely costly subsidies to Bio fuel markets.

5.2.14 Future of Timber

The interviewee was asked whether he believed that the private pulpwood and hardwood production could be increasing or decreasing in KwaZulu-Natal. The Logistics Manager responded that he did not know whether he was qualified to answer but he suggested that there is a constant struggle between timber production and sugar cane in KZN. The long term investment in timber always has to be justified against the much quicker turnover offered by sugar cane.

5.2.15 Specie Mix

The interviewee was asked: Do you believe that the specie of wood chips exported will change more towards a particular specie (Wattle or Gum)? The Logistics Manager responded that was really a question for the final customer to determine (what sells) but the reality was that there were specific conditions and zones that Wattle does well in and the same for Gum. One would want to match the optimum specie with conditions to ensure the best results and given that conditions such as climate and topography will not change too quickly, he could not see the specie mix changing dramatically.

5.2.16 Timber Supply to New Pulp Mill

The interviewee was asked if the pulp mill in Richards Bay goes ahead will timber from Southern KwaZulu-Natal be diverted to this mill? The Logistics Manager responded that given the cost of logistics he did not believe Southern KZN will

supply to Richards Bay and there is enough fibre in Northern KZN to supply the Richards Bay pulp mills needs.

5.3 Conclusion

This chapter gave a detailed discussion of the qualitative results acquired. Three qualitative interviews were conducted. The information collected from interviews were used to answer the objectives of this study.

Interviews were carried out on three key players at NCT Forestry Co-operative limited. These were the Group General Manager, Assistant General Manager and the Logistics Manager. From the interviews the information gathered was that NCT was constantly trying to increase the availability of timber for the Durban Wood Chip mill by investing in farms through partnerships, leases and through the NCT Tree Farming. Efforts made to improve the yields on their farms included better maintenance and specie selection. Farmers had little control over the increased transport costs. The option of using rail was no longer available as the branch rail lines have been closed. The excess use of road transport resulted in the road infrastructure being damaged. The most challenging factors that the farmers had to deal with were transport costs, municipal rates and land claims.

The Durban Wood Chip mill was built as an outlet for farmers from Southern KZN. This on its own was a saving for the members of NCT as the timber did not have to be sent to Richards Bay. The members of NCT had continued to supply the Durban mill as they felt a sense of ownership. When the Durban mill could not accept all of the farmer's timber, some farmers felt it necessary to supply other mills due to their cash flow constraints. The Durban mill was situated in the Port of Durban and had space constraints. Due to space constraints excess stock of logs could not be stored. The position of the Durban Wood Chip mill has had a positive impact on the farmer. The saving on transport cost is instrumental for the cash flow of the farmer whom could utilise these savings to expand his farming area. Land claims, community development, pests and diseases and fires were key threats to the timber

farmer. Farmers whom wanted to increase the number of farms they owned purchased farms from farmers whom wanted to exit the business. These additional farms increased the volume of timber that was available. The more successful farmers who purchased other farms managed these farms well enabling them to achieve increased yields. The largest wood chip buyers in the world were the Japanese. The Japanese always looked at long term sustainability resulting in investment in South Africa in a joint venture with NCT Forestry. The exchange rate of South Africa was volatile and was counteracted by the price increase or decrease as agreed with the client.

There seems to be agreement with the three interviewees and the thirty three participants of the survey on most issues.The final chapter of the study follows. Chapter 6 focuses on the conclusions of the study.

CHAPTER 6

Conclusions

6.1 Introduction

This chapter presents the conclusions and recommendations of the information that was gathered from the literature review in conjunction with the responses that interviewee's and the questionnaire respondents provided. The aim of this study was to examine the trends in wood chip exports from the Port of Durban and the challenges faced by private pulpwood farmers in Southern KwaZulu-Natal. This chapter provides evidence to support the objectives and findings on wood chip exports and the challenges faced by private pulpwood farmers in Southern KwaZulu-Natal. Furthermore, this chapter presents the limitations of this study and suggests areas of further research.

6.2 The Research Problem and Methodology

The demand for timber exports (wood chips) from Durban is increasing. In order for Southern KwaZulu-Natal timber farmers to meet future demand there needed to be extensive expansion to existing timber plantations. Further contributions could be made to the economy by creating new jobs and increase foreign exchange earnings through the increase in timber plantations. Land reform, transportation costs, fires, timber theft and municipal rates were the main challenges and constraints that have affected the forestry sector and prevented this sector from realising its full potential contribution to sustainable development. The timber industry needs to understand, manage and address these challenges. The objectives of this study were hence to examine the trends in wood chip exports from the Port of Durban and to examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal.

This study was conducted in Durban but targeted 119 participants from various parts of the Southern KZN region, all of them being timber farmers that were members of NCT Forestry Co-operative Limited whom were responsible for the supply of timber

to the NCT Durban Wood Chip mill. From the total population of 119, 33 respondents completed the online questionnaire. Interviews were held with three participants belonging to NCT Forestry Co-operative Limited and included the Group General Manager, the Group Logistics Manager and the Group Assistant General Manager. These key personnel were selected on the basis that they had a strong forestry background and were involved on a daily basis with timber farmers for the supply of timber to the NCT Forestry group of companies.

6.3 Research Objective 1

Objective one of the study was to examine the trends in wood chip exports from the Port of Durban.

6.3.1 Findings

The findings of the study showed that wood chips exports have increased from the Durban facility between 2006 and 2011. This came from recent research literature as well as data from NCT Durban Woodchips (PTY) LTD. According to Chamberlain (et al., 2005), the export of woodchips was a contentious market in South Africa. The wood chip market has achieved higher prices for plantation owners by successfully breaking pricing monopoly of the large pulp plants in South Africa. The wood chip market's survival has been based on a single international buyer market, Japan. The wood chip export facility in Durban exported the first wood chips in February 2005 (Keyser, 2011). This facility has had steady growth and in the 2009 financial year exported a total of 575 585 tons of wood chips. In 2010, with consideration to the recession, the facility exported 431 876 tons during the financial year. In the financial year ending 2011 the export from the facility was 508 698 ton. The wood chipping mill reached a milestone in July 2011 when the mill exported it's three millionth tonne of wood chips to Japan during its seventh year of operation (Keyser, 2011). Furthermore, wattle and eucalyptus wood chips were also exported from the Durban facility. The eucalyptus exports were 80% and wattle was 20% of the total export. Over the years the export of wattle increased and in 2009 the total Wattle exported

totalled 41.50%. In 2010, wattle exports were 43.4% and in 2011, 42.5%. Wattle timber however took longer to grow than eucalyptus and was more expensive than eucalyptus timber.

The responses from the interviews showed that during times of the ZAR weakness, the client (Japanese company) can negotiate a price reduction for purchase of woodchips and during the increased strength of ZAR, a price increase can be negotiated. The Japanese were the largest wood chip buyers in the world and always look at long term sustainability. The exchange rate volatility were counteracted by the price increase or decrease as agreed with the client. Overall, this meant that if the product is cheaper for the client then the client will purchase more which will, in turn, mean increased export of wood chips. Figure 2.10 in Chapter 2 clearly shows the Japanese Yen has appreciated against the USD, therefore making it cheaper to purchase wood chips as the international selling currency for wood chips was in USD. The objective of examining the trends in wood chip exports from the Port of Durban was fulfilled by the research conducted in this study.

6.4 Research Objective Two

The second objective of the study was to examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal.

6.4.1 Findings

The second objective was clearly answered by the research data collected. The research showed that there was stability and growth in pulpwood production in Southern KZN. The qualitative and quantitative results confirm that timber production is definitely increasing and hence contributing to stability of private pulpwood production in Southern KwaZulu-Natal.

Analysis of the 33 farmers forecasts gathered through the questionnaire showed that between the years 2011 to 2015 the percentage of Gum available will increase by

19.7%.The forecast for the 2011 year was 170 600 tons while the forecast for the 2015 year reflects 204 200 tons. The percentage of Wattle available will increase by 10.9%. The forecast for the 2011 year was 136 500 tons while the forecast for the 2015 year reflects 151 424 tons. Pine production is expected to be almost constant at around 9 000 tons per annum. The 33 farmers indicated that 97% of respondents were producing wattle and 91% of respondents were producing gum and this was supplied in it's entirety to Durban Wood Chips. The dominant reasons for this tremendous supply to Durban Wood Chips included factors like price, supply contract, accessibility and member affiliation.

The interviews and questionnaires gathered information on challenges faced by private pulpwood farmers in Southern KZN. Results showed that the dominant reasons for the decline in land under plantations were land reform, transportation costs and municipal rates. Although the land under plantation was deceasing, there was an increase in yields. Results for the most challenging factors affecting private timber production into the future were land claims, road infrastructure, economics (Cost vs Income) and market availability / demand for timber. The biggest concern regarding the challenges was that the farmers themselves had very little to no control over these factors. Furthermore, 92% of timber farmers respondents do not plan to produce timber beyond 60 years.

6.5 Limitations

This study did have limitations. Two of these limitations are discussed below.

6.5.1 Electronic medium

Due to confidentiality of member's details, the questionnaire had to be forwarded to the respondents electronically via NCT Forestry Co-operative Limited. This is a limitation in that there was no direct contact (face to face) with the respondents and this could have contributed to the low participation rate.

6.5.2 Sample size

This study targeted 119 participants, all of them being timber farmers that were members of the NCT Forestry Co-operative limited. This was the total population of timber farmers in the Southern KZN region that supply NCT Durban wood chips. The primary reason for selecting these participants was that these individuals were responsible for the supply of timber to the NCT Durban Wood Chip mill in Durban. Because 33 respondents out of 119 completed the questionnaire, therefore, the findings are not generalisable. Nevertheless they are useful and informative and supported by the reviewed literature.

6.6 Conclusion

This study has revealed that the demand for wood chips has increased in recent years. Due to the increase in demand for wood chips there was a concern that the resource available may not be adequate to fulfil the production required for future wood chip export. The literature reviewed was focused on the wood chip exports from the Port of Durban and the challenges faced by private pulpwood farmers. From the literature review it became clear that the demand for wood chips by international companies is increasing. It was cost effective for international companies to import their wood chips requirements from South Africa as the pricing was US Dollar based. The Japanese Yen was strong against the US Dollar resulting in the Japanese companies paying less for their wood chips in 2010 compared to 2002. In the literature review the factors that affect future timber production was highlighted and included land reform, fires, transportation costs and municipal rates and timber theft.

The objectives of this study are to examine the trends in wood chip exports from the Port of Durban and to examine the stability and growth of private pulpwood production in Southern KwaZulu-Natal. 33 farmers responded to the questionnaire out of a population of 119. Three qualitative interviews were also conducted. Wattle and Gum wood chips were exported to the international pulp and paper mills. 48% of respondents had Gum plantations while 44% had Wattle plantations while pine plantations accounted for 8%. The results showed that between the years 2011 to 2015 the percentage of gum available has increased by 19.7% and wattle by 10.9%

while pine was stagnant. The results also reflected that the main motivating factors included: long term supply contract with fixed pricing, competitive marketing arena, retention of farmer's identity as a private grower, technical information and support from an open market and lastly government incentives. The responses for the dominant reasons for the chosen market were analysed and included price, supply contract, accessibility and member affiliation.

In terms of the sustainable production of timber and how many years the respondents could envisage the production of timber at their farms, the results showed that 27% of respondents will continue to produce Gum between 31 to 60 years while 29% of respondents will continue to produce Wattle. This was a cause for concern as the continued production seems to be largely limited to 60 years. Dominant reasons for the decline in timber production included, land claims, crop change, timber theft, fire and transportation costs. The most dominant factors were land reform, transportation costs and municipal rates. The most challenging factors affecting private timber production into the future included were land claims, road infrastructure, economics (cost vs income) and market availability.

Interviews gathered information from three key players at NCT Forestry Co-Operative Limited. NCT was constantly trying to increase the availability of timber for the Durban Wood Chip mill by investing in farms through partnerships, leases and through NCT Tree farming. Better maintenance and specie selection were some of the efforts made to improve the yields on their farms. Due to the closing of the branch rail lines some farmers were forced to use road transport. The excess use of road transport resulted in the road infrastructure being damaged. The Durban Wood Chip mill was built as an outlet for farmers from Southern KZN which reduced their transportation costs. Members felt a sense of ownership and continued to support the Durban Wood Chip mill. Due to the Durban mill being situated in the Port of Durban, the mill had experienced space constraints and could not always accept the entire farmer's timber supply. Although the Durban mill is situated in the port it has a positive impact on transport costs off the farmer. The saving on transport cost is instrumental for the cash flow of the farmer whom could utilise these savings to expand his farming area. Land claims, community development, pests and diseases as well as fires were key threats to the timber farmer. Existing and well established

farmers purchased farms from farmers whom wanted to exit the business and managed these farms well enabling them to achieve increased yields. The Japanese clients were the largest wood chip buyers in the world and contributed to long term sustainability of wood chips by investment in South Africa through a joint venture with NCT Forestry. The land reform process needs to be finalised as this will remove the negativity and encourage the farmers to continue producing timber on their farms.

6.7 Recommendations for Future Studies

The research conducted revealed that there are a number of areas for future research. First, research should examine other international markets e.g. Europe and China that also import woodchips. Second, research could be undertaken on the longevity of timber farms in Southern KwaZulu-Natal. Presently research data from this study showed that 92% of the respondents envisaged the production of timber at their farms to be active up till 60 years in Southern KwaZulu-Natal. Third, future research should focus on at all timber farmers in Southern KwaZulu-Natal in order to get a better understanding of the challenges faced by the timber farmers. A large portion of timber farmers support other mills namely Sappi Saiccor and Mondi Merebank. Finally, research should examine the effects of global warming on timber production in Southern KwaZulu-Natal.

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APPENDIX 1: QUESTIONNAIRE

Wood Chip Exports and the challenges faced by Private Pulpwood farmers in Southern KwaZulu Natal.

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS

Dear Respondent,

MBA Research Project
Researcher: Lenny Naidoo (031-2056388)
Supervisor: Dr Mihalis Chasomeris (031- 260 2575)
Research Office: Ms P Ximba 031-2603587

I, Mr. Lenny Naidoo am an MBA student at the Graduate School of Business at the University of KwaZulu Natal. You are invited to participate in a research project entitled Wood Chip Exports and the challenges faced by Private Pulpwood farmers in Southern KwaZulu Natal. The aim of this study is to determine whether the plantation resource available is sufficient to meet future demand of timber export from the Port of Durban.

Through your participation I hope to understand and

- **To examine the trends in wood chips exports from the Port of Durban**
- **To examine the stability and growth of private pulpwood production in SKZN**

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this study. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business, UKZN.
If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you about 10 – 15 minutes to complete. I hope you will take the time to complete this survey.

☐ **I Agree**

Please indicate your type of timber plantation

☐ Gum

☐ Wattle

☐ Pine

What is your farm's potential tonnage timber production you forecast for the next five years?

	2011	2012	2013	2014	2015
Gum					
Wattle					
Pine					

What measures should be taken to improve the stability and growth of private pulpwood production in Southern KwaZulu Natal? (Please explain)

As a private timber grower what would you describe as a factor that would motivate you to continue timber farming? (Please rate each factor)

	Unimportant	Slightly Important	Important	Very Important	Critically Important
Long term supply contract with fixed pricing	○	○	○	○	○
Competitive marketing arena	○	○	○	○	○
Retention of my identity as a private grower	○	○	○	○	○
Technical information and support from an open market	○	○	○	○	○
Government Incentives	○	○	○	○	○

Which timber markets do you serve? (Please specify annual tonnage (2011) for your chosen markets)

	Gum	Wattle	Pine
Durban Wood chips			
Masonite			
Mondi Merebank			
Sappi			
Special Markets			

What are the dominant reason(s) for the chosen markets? (Please rate each reason)

	Not Important	Slightly Important	Important	Very Important	Critically Important
Price	○	○	○	○	○
Supply contract	○	○	○	○	○
Accessibility	○	○	○	○	○
Member affiliation	○	○	○	○	○
Other	○	○	○	○	○

If you have chosen OTHER for the above question, please specify

How many more years do you envisage your farm will continue to produce the following types of timber?

Gum _____

Wattle _____

Pine _____

What would you describe as the DOMINANT reason(s) for the decline in timber production? (Please rate each reason)

	Unimportant	Slightly Important	Important	Very Important	Critically Important
Land reform	○	○	○	○	○
Crop change	○	○	○	○	○
Timber theft	○	○	○	○	○
Fire	○	○	○	○	○
Municipal Rates	○	○	○	○	○
Transportation Costs	○	○	○	○	○
other	○	○	○	○	○

If you have chosen OTHER for the above question, please specify

_____

What do you believe will be the most challenging factors affecting private timber production into the future? (Please rate each factor)

	Not Challenging	Slightly Challenging	Challenging	Very Challenging	Critically Challenging
Labour legislation	○	○	○	○	○
Economics (costs vs. income)	○	○	○	○	○
Municipal rates	○	○	○	○	○
Land claims	○	○	○	○	○
Security	○	○	○	○	○
Road infrastructure	○	○	○	○	○
Climate change	○	○	○	○	○
Pests and disease	○	○	○	○	○
Market availability / demand for timber	○	○	○	○	○
Alternative land use	○	○	○	○	○
Other	○	○	○	○	○

If you have chosen OTHER in the question above, Please specify

_____

APPENDIX 2: GATE KEEPERS LETTER

Please address correspondence to:

HEAD OFFICE

Your Ref:

Our Ref:

NCT FORESTRY CO-OPERATIVE LIMITED

ESTABLISHED 1949

346 Burger Street, Pietermaritzburg 3201
P.O. Box 1445, Pietermaritzburg, 3200 South Africa

Telephone: +27 (0)33 897 8500
Facsimile: +27 (0)33 897 8501

Webpage: www.nctforest.com

25 July 2011

Professor Anesh Maniraj Singh
Head: Graduate School of Business
University of KwaZulu Natal
Westville Campus
DURBAN
4001

Dear Prof. Singh

PERMISSION FOR LENNY NAIDOO TO CONDUCT RESEARCH AS PART OF MBA QUALIFICATION

We hereby grant Mr Naidoo permission to conduct research as part of his MBA.

We would request that any sensitive information be dealt with in a confidential manner.

Sensitive information would comprise that associated with client or supplier detail. Generally we get the permission of the client and or supplier before releasing any information deemed their domain. You are most welcome to contact the author of this letter at any time to test sensitivity level of any information that Mr Naidoo includes in his dissertation.

Yours sincerely

ROB THOMPSON
ASSISTANT GENERAL MANAGER

District Offices

Vryheid:	P.O. Box 2036, Vryheid, 3100	Tel: 034 982 2597	Fax: 034 982 2880
Greytown:	P.O. Box 671, Greytown, 3250	Tel: 033 413 1963	Fax: 033 413 2790
Richards Bay:	P.O. Box 481, Richards Bay, 3900	Tel: 035 789 6200/1	Fax: 035 789 6388
George:	P.O. Box 10615, George, 6530	Tel: 044 884 0200	Fax: 044 884 0208
Piet Retief:	P.O. Box 2396, Piet Retief, 2380	Tel: 083 634 6646	Fax: 017 826 3817

APPENDIX 3: ETHICAL CLEARANCE LETTER

UNIVERSITY OF
KWAZULU-NATAL
INYUVESI
YAKWAZULU-NATALI

Research Office, Govan Mbeki Centre
Westville Campus
Private Bag x54001
DURBAN, 4000
Tel No: +27 31 260 3587
Fax No: +27 31 260 4609
mohunp@ukzn.ac.za

2 August 2011

Mr L Naidoo (209510013)
Graduate School of Business
Faculty of Management Studies
Westville Campus

Dear Mr Naidoo

PROTOCOL REFERENCE NUMBER: HSS/0671/011M
PROJECT TITLE: Wood Chip Exports and the Challenges Faced by Private Pulpwood Farmers in Southern KwaZulu-Natal

In response to your application dated 28 July 2011, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.
PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Professor Steven Collings (Chair)
HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

cc. Supervisor: Dr M Chasomeris
cc. Mrs C Haddon, Faculty of Management Studies, Westville Campus