



TRADE & INDUSTRIAL POLICY STRATEGIES

**TIPS REPORT FOR THE
DEPARTMENT OF TRADE AND INDUSTRY**

**Case study on the forestry regional
value chain in Southern Africa:
South Africa, Mozambique and Tanzania**

Tracy Ledger

February 2017

**Trade & Industrial
Policy Strategies
(TIPS) is a research
organisation that
facilitates policy
development and
dialogue across
three focus areas:
trade and industrial
policy, inequality
and economic
inclusion, and
sustainable growth**

**info@tips.org.za
+27 12 433 9340
www.tips.org.za**

**Tracy Ledger is a
TIPS Research
Fellow**

CONTENTS

Executive Summary.....	1
1. Introduction and Background.....	11
2. Country Context: An Overview of the Forestry Sector.....	14
2.1. South Africa.....	14
2.2. Mozambique.....	23
2.3. Tanzania.....	30
3. Value Chains.....	38
3.1. South Africa.....	38
3.2. Mozambique.....	51
3.3. Tanzania.....	55
3.4. Regional Summary.....	58
4. Developing Regional Value Chains in the Forestry Sector.....	59
4.1. Key Findings.....	59
4.2. Policy Implications and Recommendations.....	61
References	65
Organisations Interviewed.....	66

ABBREVIATIONS/ACRONYMS

AGOA	African Growth and Opportunity Act
COMESA	Common Market for Eastern and Southern Africa
DAFF	Department of Agriculture, Forestry and Fisheries
dti (the)	Department of Trade and Industry
DNTF	National Directorate of Land and Forests (Mozambique)
DUAT	A land use right in Mozambique
DWP	Dissolving wood pulp
EAC	East African Community
EBA	Everything But Arms
EIA	Environmental Impact Assessment
EU	European Union
FAO	Food and Agricultural Organisation (of the United Nations)
FDT	Forestry Development Trust
FLEGT	Forest Law Enforcement, Governance and Trade
FSA	Forestry South Africa
FSC	Forest Stewardship Council
GDP	Gross Domestic Product
GSFF	Global Solidarity Forestry Fund
IDC	Industrial Development Corporation
IFLOMA	Manica Forestry Industries (Mozambique)
IIED	International Institute for Environment and Development
MDF	Medium density fibreboard
MOU	Memorandum of Understanding
MPM	Mufindi Paper Mill (Tanzania)
NGO	Non-Governmental Organisation
PAMSA	Paper Manufacturers Association of South Africa
R&D	Research and Development
SADC	Southern African Development Community
SAFCOL	South African Forestry Company Limited
SETA	Sector Education Training Authority
SMMEs	Small, Medium and Micro Enterprises
TANWAT	Tangyanika Wattle Company

EXECUTIVE SUMMARY

Introduction

The objective of this study is to provide an overview and analysis of the structure, key functions and characteristics of the forestry value chain operating in and among South Africa, Mozambique and Tanzania in order to identify market opportunities and the interventions required to support the growth of the regional value chain. The research focuses on three value chains – forestry to timber; forestry to pulp and paper; and forestry to furniture.

To manage the complexity of the study, it was decided to focus on three countries – South Africa, Mozambique and Tanzania. The latter two were selected on the basis of their current level of forestry output, together with their contiguous location. An evidence-based approach has been adopted for this study, based on the compilation of industry data from existing and new sources. The value chain analysis is focused on answering the following questions: how is the value chain organised? How does it function? Who are the main actors? What are the key institutions and forms of coordination? How well is the chain performing in coordination, competitiveness and intra-regional trade? Where are the opportunities to (1) relocate parts of the chain among the countries, and (2) to enhance existing intra-regional activities?

Country Reviews

Each of the three countries in this study – South Africa, Tanzania and Mozambique – have both differences and similarities in their forestry sectors. These are the basis for a number of opportunities to enhance regional value chains. An analysis of each country provides the context for the detailed value chain analysis.

South Africa

The total forestry sector (i.e. including downstream processing) contributes between 1% (IDC, 2014) and 2% (FSA, 2105) to the total gross domestic product (GDP) of South Africa, but almost 10%-12% to manufacturing GDP (with pulp and paper being the most significant contributor). The sector is particularly important in the broader economy, however, for two factors: rural employment and export earnings.

The vast majority of South Africa's timber for commercial purposes is derived from plantations, which have long been established. This is a key difference with the other two countries in this study, where woodlands are currently the major commercial resource, and large-scale plantation development is relatively new. Plantations in South Africa currently cover almost 1.3 million hectares and are planted almost entirely with exotic trees – softwoods (pine) and hardwoods (eucalyptus and wattle). The most common plantings are pine (51% of the total) and eucalyptus (42%). Wattle is the third major tree, making up about 7% of the total plantings. There is clearly a very strong bias in the ownership of plantations toward large private corporate companies, which hold more than half of all plantations. South Africa has the highest percentage of Forest Stewardship Council (FSC)-certified forests in the world – almost 82%. This contrasts with Mozambique and Tanzania where this is low.

The area of commercial plantations in South Africa reached a peak of 1.52 million hectares in 1996, compared to the current approximately 1.3million hectares. New afforestation increased fairly rapidly through the late 1980s, reaching a peak of almost 45 000 hectares in 1990, and then declined rapidly in the 1990s, to well below 10 000 hectares per annum. In 2013 (the latest year for which this data is available) showed total plantation expansion of just 13 353 hectares from 2006. The majority of this (75%) was hardwood.

South Africa has a strong geographical concentration of forest areas in relatively few areas. Most of the plantations (and timber-processing facilities) are in Mpumalanga and KwaZulu-Natal (each with around 40% of total plantation area, and to a lesser extent in the Eastern Cape (about 11%). More than 80% of South Africa's plantations are in these three provinces.

More than two thirds of the output of South African plantations goes towards pulpwood (i.e. as input for the various types of pulp and paper production. This category includes woodchips that are produced in South Africa and exported for pulp production in Japan). The share of pulpwood in timber production compared to sawlogs has increased steadily over the past 20 years, and most of the new afforestation over this period has been hardwood. This reflects the strong international demand for pulp and paper, relative to other timber uses.

Plantation forestry in South Africa is characterised by a high level of vertical integration: many plantation owners are also primary and/or secondary processors. Hans Merensky and York Timbers are good examples in sawn timber, PG Bison in Fiberboard and Sappi and Mondi in pulp and paper. This means that the output of plantations is highly correlated with developments in primary and secondary processing, with wooden furniture being a noteworthy exception. It also means that many of the primary and secondary processing sectors obtain their market advantage through the ownership of plantation resources (and thus obtaining their raw material at a relatively competitive price). Thus plantation ownership is often the key factor for viability of much of this processing.

The forestry sector as a whole runs a positive balance of trade. Forestry products are an important contributor to South Africa's exports, most particularly pulp. Between 1992 and 2014, imports grew marginally more than exports (11.9% and 10.9% respectively), and the positive trade balance grew by almost 9%. The biggest percentage growth in imports over that period was pulp (for paper), reflecting local supply constraints.

There is a clear demand for timber – particularly for pulp, but across almost all end uses. This means that if the supply of timber is increased, existing processing capacity can take almost immediate advantage of it. The implication is that the sector has a high *latent potential* to create employment and – most notably – to increase exports and make an important contribution to the national balance of payments. The single most important constraint to the local sector is supply of raw materials, most notably for the fibre, pulp and paper processing sectors. Import of inputs for this market is simply not feasible. An important constraint to plantation expansion is the onerous regulatory environment around environmental impact assessment approval, particularly the granting of water licences. The second important market constraint is the relatively low timber recovery rates, which are below 40%. This can be compared to an international benchmark of around 60%. The implication is that supply of raw material, and the efficiency of primary processing, could be significantly improved by raising timber recovery rates to international best standards.

Mozambique

There is a significant problem with forestry data in Mozambique. Little data is kept by government, and what data it does collect is often not made publicly available. The very high levels of illegal logging and corruption in the forestry sector contribute to “official” trade data for forestry products that is impossible to verify.

Southern and Eastern Africa are considered to be among the best regions globally for forestry, given their warm climate and generally good rainfall. About half of Mozambique is covered by natural forests (comprising more than 50 million hectares), with “miombo”¹ being the most common type of forest cover. As much as 70% of the total forests of Mozambique are suitable for timber production, which makes it one of the country’s most significant resources for economic development.

All land in Mozambique (including natural forests and land available for plantations) is owned by the state, which can grant rights of occupation and use, but not ownership. Different levels of government (local, provincial and national) have different levels of authority for granting these rights. Ways in which foreign investors can gain access to land for forestry purposes are limited.

The existing plantation sector in Mozambique is very small, but there has been considerable investment over the past five years, which should see its contribution increasing significantly, as plantations begin to mature and the associated primary and secondary processing sectors start meaningful operations. The aim of these new investments is primarily to produce forestry products for export. The most recent FAO (2015) report on Mozambique estimated that plantations would cover about 75 000 hectares in 2015. Most of the plantations are planted with pine or eucalyptus (the majority of the wood is destined for fibre and pulp).

Most of the wood extracted from natural forests is either exported as whole or very basically processed logs (the most lucrative commercial activity), used for firewood, or for the manufacture of charcoal. More than 90% of all timber exports from Mozambique go to China. Logs and sawn timber (much of it illegal) are also exported to neighbouring Tanzania. Mozambique’s main timber-based product imports are paper (55% by value – almost US\$50 million) and more than two thirds of this comes from South Africa. Wooden furniture is the second most important timber import, with China now the biggest supplier, having overtaken South Africa.

The regulatory environment around the forestry sector in Mozambique could best be described as “complex” with some seeing it as more “dysfunctional”. This refers particularly to the natural forest sector (plantations and associated activities are still in their infancy), and it poses significant threats to the sustainability of Mozambique’s natural forest reserves, as well as the ability of the government (and local communities) to benefit from these resources. The main problem is not legislation itself, but the implementation and enforcement thereof, which is extremely patchy.

There is little doubt that Mozambique has significant plantation forestry potential, given the large areas suitable for the production of the short-rotation hardwood that is in high demand for paper and fibre pulp. This potential is evident in the significant foreign investment that has come into the sector over the past five to seven years. The government has placed a strong emphasis on beneficiation, and the requirement of commitment to developing domestic processing in order to

¹ “Miombo” refers to a woodland area containing a large number of species, but dominated by the oak-like Miombo trees.

obtain access to land for plantations will be a key factor building the sector. If the sector can overcome its constraints (which include the sovereign debt downgrading of Mozambique and political tensions) it will most likely be a leading pulp producer by 2030.

Tanzania

There are problems with access to accurate and up-to-date data on the forestry and timber products sector in Tanzania, due in part to low capacity in this regard in government (which limits the financial resources available to undertake regular forest inventories), but mostly because of the very high levels of informality in the sector. Very few of the sector participants are registered companies.

Tanzania is relatively heavily forested. Total forest area (natural forests, plantations and woodlands) is estimated to be around 48 million hectares (UNEP 2015), which represents about 50% of the surface area of the country. By far the biggest component of this is natural forests, which contain a high percentage of hardwoods, some of them very valuable (such as sandalwood).

More than three quarters of Tanzania's population live in rural areas, and are highly dependent on forests for a range of products and livelihood strategies. The forestry sector is estimated to contribute about 3.3% of Tanzania's GDP and about 3% of paid formal wage employment (FLEGT, 2014b). The impact on households and the informal sector is more significant: it is estimated that the forestry sector provides employment of one sort or another to about three million people (or between 8% and 10% of the total population). In terms of potential for developing plantations, the best growing conditions are found in the Southern Highlands, where annual rainfall is above 2 000mm per annum.

Much of the current economic activity around forestry – particularly for rural households and smaller enterprises – is centred around natural forests. They are the main source of firewood and charcoal. More than 90% of Tanzanian households use biomass as their main source of energy. Natural forests are used by communities through a complex system of tenure and occupation rights.

The Forestry Development Trust estimates that by 2025 Tanzania's demand for industrial wood will be around 3.7 million m³ per annum, and that existing plantations will only be able to supply less than a third of that. There is thus a concerted drive to establish new plantations to address the shortfall, but progress to date has been patchy, largely because of the difficulties that investors face in obtaining access to land through Tanzania's extremely complex land tenure regime, together with poor infrastructure. All land in Tanzania is owned by the state, and the process for foreign investors to acquire land has been both restrictive and difficult. This is the main reason why most foreign investment to date has been in processing rather than in new plantation development (such as the Green Resources acquisition of Sao Hill and the purchase of Mufindi Paper by a Kenyan group). The state is still the largest plantation owner in Tanzania, although most harvesting is done by private companies, under a harvesting permit system.

There are currently 16 active government plantations in Tanzania, covering only about 80 000 hectares and they are the main source of industrial wood in the country. Plantations are planted mostly (95%) with softwood (pine and cypress), destined for sawmilling (construction timber), limited amount of paper, wood panel products and wooden poles.

Tanzania has a large trade deficit in manufactured wood products, despite having access to large amounts of timber and very low wage costs. Tanzania is eligible for preferential trade with the United States and the European Union (EU) under AGOA and EBA (Everything But Arms), respectively. This means that significant export markets will be available if the country can improve the quality and quantity of outputs produced by the forestry sector. There appears to be a general shortage of timber in East Africa, most notably in Kenya and in Uganda. This is increasing demand, and creates good opportunities for Tanzanian timber processors.

Value Chains

This report documents and describes the value chains in each country, for each of the three focus areas – forestry to timber, forestry to pulp and paper, and forestry to furniture.

South Africa

The **forestry to timber value chain** incorporates roundwood (industrial roundwood, which can be categorised as sawlogs, veneer logs, pulpwood and/or fuelwood), sawn wood, wood panels and wood chips. The two most important categories of roundwood are sawlogs/veneer logs and pulpwood, which together make up more than 92% of all roundwood production. In 2005/06 the output of roundwood peaked at just under 23 million m³. Since then (i.e. up to 2013) it declined each year, and in 2013 was 21.8% lower than in 2005. This is the direct result of the failure to develop new plantations.

Sawn wood is the input into a number of downstream processing activities – higher-quality wood goes into construction and housing, joinery and furniture, while lower-quality wood goes into a number of industrial applications, such as crates. The bulk of softwood (pine) is used as structural wood in the construction sector. Most of the eucalyptus goes into higher-value furniture and joinery. The building sector is thus the biggest market for sawn wood, absorbing around 75% of production. The sawmilling sector has been under pressure for a number of years, and many of the smaller operators have gone out of business. The outstanding feature of the local sawmilling sector is the generally very old (40 years or so) technology used. This saw frame technology is inefficient, contributing to the low wood recovery rates – currently below 40%, and significantly lower at many smaller sawmills. Sawmills are in a very difficult position – they need better technology to increase efficiencies and profits, but poor market conditions mean that they cannot afford significant capital investment. Since most of the sawmills are **private** companies, their ability to raise capital is limited.

Woodchips are a significant part of the forestry to timber sector, most particularly because of their export earnings. The bulk of these exports goes to Japan, with an annual value of around US\$140 million (just over R2 billion).

Pulp is the biggest part of the local forestry sector, by a considerable margin. It represents the biggest share of plantations, is the highest value of exports, and is headed by two very significant companies – Sappi and Mondi – both world players in their sector. Pulpwood makes up around 56% of all plantations (an increasing percentage of which is hardwood), and much of the additional afforestation planned for in the Eastern Cape and KwaZulu Natal will be pulpwood, mostly hardwood. Sappi and Mondi are South Africa's two largest pulp producers, and both produce pulp

for the paper sector, but only Sappi produces dissolving wood pulp (DWP). It is a world leader in this field: Sappi's production capacity is around 18% of global demand.

Both total paper and pulp production have fallen over the period from 2008 to 2015; paper by 437,000 tons (16%) and pulp by 590,000 tons (23%). However, exports of pulp rose significantly over the same period – 279,000 tons, or 33%. In 2008, exports of pulp accounted for 33% of total production. By 2015 that percentage had increased to 57%. This reflects the strong increase in global demand for pulp. It is interesting to note that while domestic consumption of paper products has remained more or less stable, domestic consumption of pulp is declining, and paper exports have declined significantly. This reflects the declining output of the domestic paper sector.

Wooden furniture is a relatively small part of the forestry value chain in comparison to parts such as pulp. However, it has potential to contribute to economic growth and job creation given its labour intensive nature, the relatively high number of small, medium and micro enterprises (SMMEs) in the sector, and the opportunities presented by economic growth in neighbouring countries: demand for furniture is highly correlated with rising domestic growth and consumer incomes in Southern African Development Community (SADC) countries such as Tanzania and Mozambique. The furniture manufacturing sector currently contributes around 1% to total GDP, and wooden furniture contributes between 30% and 40% of that total. The entire furniture sector has been negatively affected by the economic slowdown since 2009, since demand for furniture is highly correlated with domestic economic activity, particularly household income. Rising levels of household debt have also been a negative factor for the furniture sector.

Mozambique

Forestry value chains in Mozambique are very poorly developed, and most activity is around either unprocessed or minimally processed logs, most of which are exported. This is changing, however, and will change even more significantly over the next 20 years. The most significant changes are likely to be seen in the pulp and paper value chain, and upstream into plantations.

Most of the wood-to-timber value chain activities in respect of natural forests is around the export of logs, or minimally processed (rough sawn) logs. This is also the biggest activity across the entire timber sector, by volume and value. Most of these logs go to China, through Mozambique's various deep water ports. Timber exports to China (whether designated as "logs" or as "processed timber") make up about 93% of Mozambique's annual timber exports of about 560,000m³.

Another big component of the wood-to-timber value chain is firewood and charcoal. The vast majority of households rely on biomass energy for a significant amount of their energy requirements. Firewood is the preferred fuel in rural areas, and charcoal in urban areas.

The main processed timber items produced in Mozambique are sawn timber, railway sleepers, wooden poles, wooden flooring, furniture, and door and window frames. These are all produced in relatively small quantities, and most are sold into the domestic market. Domestic consumption for timber products is increasing steadily, but this is reflected mostly in increasing imports rather than increased local production. There is practically no research and development (R&D) in the Mozambiquan forestry sector around the use of indigenous species to replace imports of wood such as softwoods for construction.

There is no paper production on any meaningful scale in Mozambique at present, and almost all paper is imported (more than US\$50 million each year), mostly from South Africa. There are, however, significant investments in the wood to pulp and paper value chain currently under way, which could turn Mozambique into a net exporter of both paper and pulp.

There is a largely informal furniture manufacturing sector in Mozambique, about which there is very little official data. The EU's Forest Law Enforcement, Governance and Trade reports that these informal carpenters are producing "surprisingly high quality" furniture using very basic tools (FLEGT, 2014). They use mostly sawn wood that they buy from sawmills or which is supplied by their clients. Much of this furniture is very well-priced. It is either sold to clients that have commissioned it, or in local markets, or in informal retail outlets.

Tanzania

Most of the timber-harvesting companies in Tanzania operating in natural forests are small, using very old technology. They tend to have low wood recovery rates – below 35% (Dinh and Monga, 2013). Sawmills (which include both hand sawing and mechanised saw milling) make up the biggest part of the timber processing sector in Tanzania – accounting for about 70% of total processing capacity. There are around 400 registered sawmills in Tanzania (there has been a big increase in their number over the past 20 years), most of which are very small, employing between five and eight people (FLEGT, 2014b). Most of these sawmills seem to be operating at below 50% capacity, due to a shortage of roundwood.

Sawn wood in Tanzania is generally of a fairly low standard and used either in the domestic market, or shipped across the border to Kenya, which has a big wood deficit. Sawn wood is used to manufacture construction products (such as wooden roof trusses), building products such as joinery and door and window frames, and limited amounts of packing material. There is also a small amount of plywood manufacturing, but this is limited by a shortage of raw materials and old equipment. Around 15% of sawn wood output is exported, with the largest markets being China, India and Kenya. Teak is an important component of sawn wood exports.

There are a small number of pole treatment plants, and the number of poles being produced increased from 905 in 2004 to 31,200 in 2008. Poles are manufactured from plantation hardwood – eucalyptus. There is a strong demand for poles from Tanzania's electrification programme, one of the biggest in Africa. Only a small percentage of these are being produced in Tanzania, with much of the demand being filled by imports from South Africa.

Charcoal is the main energy source in urban areas by a considerable margin, and demand is growing. A 2014 study estimated that the charcoal value chain is worth some US\$600 million per annum (GAI, 2014), or around 500,000 tons per annum. As much as 80% of the wood harvested from natural forests may be finding its way into the charcoal value chain. This sector has a large number of small businesses, the vast majority of them unregistered.

Pulp and paper production make up about 20% of Tanzania's timber processing sector (Dinh and Monga, 2013). There is only one pulp and paper mill, operated at Mufindi by Mufindi Paper Mills (MPM). MPM was privatised and then sold in 2004 to Rai Group, a Kenyan company. It produces about 40 000 tons of kraft paper per annum, sold into both domestic and export markets (mostly in

Eastern and Southern Africa). Tanzania produces less than half the paper it consumes, and thus imports paper, mostly from South Africa (a big component of which is newsprint), but also from the EU. Pulp and paper account for about 8% of all Tanzania's imports from South Africa (UNEP, 2015).

The local furniture sector is small, using mostly locally produced hardwood. Some furniture manufacturers are processing imported treated wood, due to the lack of such timber on the local market. The main reason for the high levels of imported wooden furniture into Tanzania is the high local manufacturing costs. Dinh and Monga (2013) calculated that producing a wooden chair in Tanzania cost US\$30 in Tanzania, about double the cost of places like China and Vietnam. This is despite the fact that wood is cheaper in Tanzania than in China, and the fact that Tanzanian wages are less than half of those paid in China. The key issue is the very inefficient nature of manufacture in Tanzania, which results in very low productivity (in terms of output per person), very high wastage of materials, and high rejection levels. This, in turn, can be attributed to low skills levels (management and operations), and old capital equipment.

Regional Summary

There are significant differences between the South African forestry sector and that in Mozambique and Tanzania, which is the basis of the current low level of regional integration. Most specifically, while the South African sector is dominated by plantations and medium and large companies, Mozambique and Tanzania are characterised by natural forest resources and high levels of participation by small and very small informal market participants, producing mostly low value-added products. South Africa produces a much higher percentage (of total output) of value-added forestry products than either Tanzania or Mozambique.

Trade in forestry products among the three countries is limited. This is as a result of logistics (forestry products – particularly raw timber – are not easily transported over very long distances) and the very different domestic markets for forestry-based products. In Tanzania and Mozambique demand for forestry products is dominated by low-value products such as firewood, charcoal and basic industrial/construction wood. There is very little integration or duplication among the various forestry value chains; most production in all three countries is either for domestic consumption, or for export to third-party destinations.

In addition, most parts of the forestry sector are **spatially bound** to a considerable degree by logistics and infrastructure, to a much greater extent than many other economic sectors. It is not possible or financially feasible to have a high degree of spatial distance among various parts of these chains, most particularly plantations and primary processing. The high costs of transport and the relatively low value of many products imply that economic viability is determined in many instances by proximity. This does not mean there are no opportunities to develop the regional value chain – there are many. Some of these are directly related to chain activities (i.e. directly in the production of forestry-based products); others are related to peripheral activities that will create greater and better opportunities within the chain. In addition, there are a number of activities that countries can collaborate on that will support the growth of the forestry sector across all three countries.

A number of key conclusions arise from the research, which are the basis on which we have made our policy recommendations. These are:

- On the basis of plans being made by companies like Sappi and Navigator Group, it is clear that **over the next 20 years the region will be a significant site of pulp production**, with Mozambique leading Tanzania until the latter can implement a land access system that facilitates more plantation development. To be part of this growth, South Africa needs to increase its hardwood plantations. The ability of the regional economy (as opposed to the individual companies) to capitalise on this will be determined by infrastructure development, political stability, access to capital and increased skills.
- As competition for land for plantations (and other agricultural production) increases, so tensions between local communities and forestry companies will increase, and could pose a significant threat to the potential of forestry (by, for example, feeding support for groups such as the opposition party Renamo). Conflicts with communities may also undermine market access (see the next point). These issues need to be addressed as a matter of urgency – policymakers cannot wait until there is a real problem.
- Across the forestry sector, FSC certification as well as community involvement will become important factors in accessing markets, particularly in Europe and North America. Outside of South Africa, progress in these areas is low.
- The increase in the number of plantations across the three countries, together with the shortage of timber in other East African countries such as Kenya and Uganda and the growth potential of the region offer considerable primary and secondary wood processing opportunities, possibly in **a wood-processing hub located in Tanzania**. Tanzania has low wages and the natural gas discoveries should contribute to a regional advantage in electricity, as well as economic growth that will support a construction boom.
- As Tanzania’s electrification process gains momentum, so the demand for charcoal will decline and hardwood from natural forests will be available for other purposes. This also means however, that a significant number of people may lose this livelihood and a strategy to support alternative livelihoods needs to be considered.
- For the manufacture of wooden furniture, there are opportunities across the region, particularly for high-end furniture, made possible by a combination of access to both cheap wood and labour (in Tanzania), relatively good skills in manufacture (in Mozambique), preferential trade access (via Tanzania) and management and design skills (South Africa).
- There are clear challenges around logistics and skills across the regional forestry sector that need to be addressed. These are most pronounced in Tanzania and Mozambique.
- There are serious problems with access to accurate and up-to-date information on the forestry sector in Mozambique and Tanzania. Better information is a key factor that will support more effective policymaking.
- Government revenue collection in Tanzania and Mozambique (particularly the latter) is being compromised by illegality, informality and corruption. Better revenue collection systems will provide the funds for a broad-based and inclusive development of regional forestry value chains.

Policy Implications

Our policy recommendations are divided into two categories – those that are applicable to the region and those that are applicable to South Africa.

Regional

A number of potentially very useful regional policy initiatives could support the growth of the regional forestry sector. We have identified these as the following:

- Establishing a regional forestry stakeholder forum to facilitate dialogue and co-operation, and to share knowledge and information with domestic industries.
- Establishing a regional forestry data initiative.
- Establishing a regional forestry sector skills development initiative.
- Developing a regional community participation strategy.
- Developing a regional forest certification initiative (with particular reference to natural forests under community jurisdiction).
- Establishing a regional capital and capacity development fund focused specifically on increasing access to capital and skills by the small businesses in the forestry sector.

South Africa

A number of initiatives are already underway in the forestry sector in South Africa, and it is not our intention to duplicate any of these. However, for South African companies in the forestry sector to capitalise on the trends identified in this report, the following issues need to be considered:

- Plantation expansion: South African wood processors – most particularly those who are engaged in the production of pulp from hardwood – need access to more raw materials. There is also a good export market in hardwood chips. There is thus an urgent need to expand the area of plantations – particularly eucalyptus. The single biggest impediment to the expansion of hardwood plantations in South Africa is the laborious and time-consuming process of obtaining environmental approval, most particularly water licences. This process urgently needs to be made simpler and more efficient. We would recommend that the forestry desk of the Department of Trade and Industry (the dti) engage with the Department of Water Affairs to discuss how this could be achieved.
- Access to suitable finance for small growers: there are many opportunities for small timber outgrowers to benefit from plantation expansion, and this will have a positive impact on rural poverty. However, there are no public finance programmes that are suitable for these timber growers, due to the long periods that they must wait between planting and harvesting. None of the existing agricultural or small business support programmes are structured to facilitate this, despite the fact that these timber growers almost always have a guaranteed market for their product, and thus represent a very low-risk loan category.
- Research and development: in order for South Africa to leverage the existing forestry base and to take advantage of the likely regional expansion of the forestry sector, we need to invest greater funds in R&D, particularly around finding new or replacement (substitution) uses for the significant natural forest resources.
- Skills in the furniture sector: we would encourage the Sector Education Training Authority (SETA) operating in the furniture sector to consider the re-introduction of an apprenticeship to replace the current learnership programme, which is not working for these businesses.

1. INTRODUCTION AND BACKGROUND

1.1. Introduction

The objective of this study is to provide an overview and analysis of the structure, key functions and characteristics of the forestry value chain operating in and among South Africa, Mozambique and Tanzania in order to identify market opportunities and the interventions required to support the growth of the value chains in each of and among the three countries.

The research examines the end markets and utilization of forest-based products, the status of these markets and key issues in production and processing and the trade of forest-based products. The research focuses on three value chains – forestry to timber; forestry to pulp and paper; and forestry to furniture. It documents the main factors affecting the flow of forest-based products in the region, and identifies synergies that can be developed to generate a more enabling environment for growing the regional value chain, leading to increased productivity and intra-regional trade. Conversely, it also identifies areas of duplication and/or intra-regional inefficiencies.

1.2. Background

SADC encompasses a large and diverse forest area, including both tropical and temperate forests. SADC countries together account for 9% of the world's forests (FAO, 2013). A large part of this is located in Angola, Malawi, the United Republic of Tanzania, the DRC, Zimbabwe and Zambia. South Africa and countries such as Tanzania, Zimbabwe and Swaziland have significant forest plantation programmes. Although South Africa has only 2% of the SADC's forest area, the country dominates in the production of forest products in the region (particularly pulp), followed by the DRC and Tanzania.

Forest-based industries in the sub-region are thus concentrated in a few countries, with South Africa playing a key and leading role. Other countries with a well-developed industrial sector include Zimbabwe (sawmills, boardmills, pulp and papermills), Zambia (sawmills, boardmills) and Swaziland (sawmills, boardmills, one pulpmill).

In 2002 SADC finalized a **Protocol on Forestry** which aims to “promote the development, conservation, sustainable management and utilisation of all types of forest and trees; trade in forest products and achieve effective protection of the environment, and safeguard the interests of both the present and future generations.” The Protocol aims to address “research gaps, laws, education and training, the harmonisation of regional sustainable management practices, increasing efficiencies of utilisation and facilitation of trade, equitable use of local forests and a respect for traditional knowledge and uses”.

Five countries in Africa with the largest forest area are Democratic Republic of Congo, Sudan, Angola, Zambia and Mozambique and together they account for about 55% of the continent's forests. However, the political situation in Zimbabwe does not bode well for investment promotion. A quick scan of the SADC forestry production level data indicates that Tanzania and Mozambique are the second and third countries (after South Africa) producing most of the forestry products in the region. Additionally, the dti has already signed an agreement with Mozambique to cooperate in the forestry sector.

In order to manage the complexity of the study, it was decided to focus on three countries – South Africa, Mozambique and Tanzania. The two latter were selected on the basis of their current level of forestry output, together with their contiguous location.

1.3. Method and Approach

An evidence-based approach for this study has been adopted, based on the compilation of industry data from existing and new sources. The value chain analysis is focused on answering the following questions: how is the value chain organized? How does it function? Who are the main actors? What are the key institutions and forms of coordination? How “well” is the chain performing, in terms of coordination, competitiveness and intra-regional trade? Where are the opportunities to (1) “relocate” parts of the chain amongst the countries and (2) to enhance existing intra-regional activities?

To answer these questions, the research was approached as follows:

- Scope in detail the profile and key drivers of the forestry sector in each country.
- Identify the key value chain drivers.
- Assess the level of value chain integration.
- Identify the presence and role of lead firms.
- Identify areas for greater regional collaboration (in both direct and support chain activities);
- Identify areas of duplication across chains.
- Critically assess the role of the broader institutional environment in facilitating or hindering more effective chain performance and regional collaboration.

Both qualitative and quantitative data was collected. **Quantitative** data was derived mostly from FAOSTAT and other international data sources and a desk top review of existing research on the forestry sectors of each of the three countries. This was supplemented by information captured during interviews with selected value chain participants in each of the three countries. **Qualitative** data was derived mostly from these interviews, supplemented by what is available in the existing research.

There are significant data asymmetries among the three countries in the study, which are discussed in more detail below. This required that we consult a number of “non-traditional” data sources, such as media reports, in order to attempt to verify conflicting “official” data. In addition, we had originally planned to appoint two research partners – one in Mozambique and one in Tanzania – to assist with the research, but this proved to be impossible, due to a lack of such potential partners and the costs quoted by those who were available. We have filled this gap by conducting our own interviews with sector participants in those two countries.

The main research activities were the following:

- An in-depth assessment of the structure and status of the three identified forestry value chains in South Africa, Mozambique and Tanzania covering issues such as production and consumption patterns, input suppliers (domestic and external), and producers (at various stages of the value

chain), export markets for these products as well as the current import patterns in these sub-sectors.

- A detailed value chain analysis to identify market and investment opportunities and challenges. This analysis will take into account the regulatory environment (at domestic, regional and international levels) and propose interventions for developing business opportunities.
- A market analysis to establish major manufacturers and producers and the level of global competition in the market for the identified forestry sub-sectors.
- A detailed analysis of SADC's and the selected countries' forestry products trade structure to better understand the product differentiation of forestry outputs, as well as opportunities and constraints for their growth. This will include an analysis of the tariff and non-tariff structure, drawn from regional experiences in forestry products trade.
- The identification and mapping of potential business opportunities with strong cross-border business linkages and complementarities among the three selected countries based on existing and potential comparative and competitive advantages in each of the identified areas.
- The identification of factors that will contribute to the successful development of the three value chains. This will include the identification of current challenges and recommendations for interventions to enhance competitiveness of the sector.

2. COUNTRY CONTEXT: OVERVIEW OF NATIONAL FORESTRY SECTORS

Each of the three countries in this study – South Africa, Tanzania and Mozambique – have both differences and similarities in their forestry sectors. These are the basis for a number of opportunities to enhance regional value chains. An analysis of each country provides the context for the detailed value chains presented in the next chapter. The information for each country is presented under the following headings:

- Forest resources (quantity, type, location, ownership)
- Forestry sector (demographics, contribution to national economy, employment, timber production and use, volumes of trade)
- Regulatory/institutional environment
- Key sector opportunities
- Key sector constraints

The details of each country’s forestry sector were compiled on the basis of both qualitative and quantitative data. There is a considerable amount of existing research on forestry in all three countries and this information was consolidated into our research findings.

One cautionary point needs to be made about this data, however: the scope of data collection, accuracy of data and the publication thereof varies enormously across the three countries. This reflects differences in data capturing and management capacity, country logistics (such as transport which makes it either easy or difficult for researchers to travel around the country), composition of the forestry sectors (it is much easier to collect commercial plantation data than woodland data), the level of informality in the sector, and local politics.

The quantity and quality of forestry data for South Africa is much higher than in the other two countries. We have addressed the data issues for Mozambique and Tanzania by consulting a number of different research sources, and through our interviews. We have a high level of confidence that we have been able to present an accurate and comprehensive overview of the forestry sectors in all three countries.

2.1 South Africa

2.1.1. Forest Resources

South Africa’s forest resources are classified into three main categories: plantations, woodlands and indigenous forests. The vast majority of South Africa’s timber for commercial purposes is derived from plantations, which have long been established. This is a key difference with the other two countries in this study, where woodlands are currently the major commercial resource, and large-scale plantation development is relatively new.

Plantations in South Africa cover almost 1.3 million hectares and are planted almost entirely with exotic trees – softwoods (pine) and hardwoods (eucalyptus and wattle). The most common plantings are pine (51% of the total) and eucalyptus (42%). Wattle is the third major tree, making up about 7% of the total plantings. Over the past 20 years the share of eucalyptus has increased slightly, at the

expense of the share of pine. Each of these three tree types have a different rotation period – that is, the time that is required from planting to harvesting. Pine plantations are divided into two main categories – short-rotation pine (used mainly for pulpwood) has a 12 to 15-year rotation period. Long-rotation pine (used mainly for sawn timber) has a rotation period of 27 to 30 years. The hardwoods (eucalyptus and wattle) have much shorter rotation periods than softwoods – around 8 to 10 years (although some eucalyptus used for furniture may only be harvested much later – somewhere between 12 and 30 years). Hardwood is used mainly for dissolving pulp and woodchips.

Yields vary depending on plantation management, tree species and harvesting age, but a general indication is that a mature pine contains about 1.7m³ of wood and a mature eucalyptus about 2m³. Hardwood is also denser than softwood – i.e. it has a higher weight to volume ratio, which makes it cheaper by weight to ship, since shipping costs are determined by volume.

Hardwood plantations also tend to have higher yields per hectare than softwood. This, combined with the shorter rotation period of hardwood, means that annual production of hardwood makes up a much greater percentage of total plantation *output* than its share of planting. Just over 55% of South Africa's total annual wood production is comprised of hardwood. The differences in rotation periods are very important in certain instances (for example, the substitution of one kind of wood for another in a particular application such as construction timber, or for smaller growers) since they impact the financial returns of different plantations.

Woodlands are defined as areas that have a tree canopy cover of more than 10%. Woodland areas cover somewhere between 30 and 40 million hectares of South Africa. The third category of forest – *indigenous forests* – is a relatively insignificant component of South Africa's forests. There is little detailed information about woodlands or indigenous forests, in terms of forest composition or livelihood strategies that they support, particularly when compared to the information that is available on plantations. This reflects the overarching data collection environment. Forestry and related data in South Africa is compiled in terms of the National Forests Act (1998) and the country's reporting obligations to the United Nations Food and Agricultural Organisation (FAO). (This latter applies to all countries that are members of the FAO, and data are submitted every five years. The latest FAO Forestry Assessment Report is for 2015). The National Forests Act obliges government to collect commercial plantation data on an annual basis, but data for woodlands and indigenous forests is collected only every four years. Given the central role of plantations in the local forestry sector over other types of timber resource, the remainder of this section focuses on plantations.

Ownership of forest resources

The commercial plantation sector in South Africa has a history going back to the 1940s. Until fairly recently there was considerable state ownership (mostly under SAFCOL, the South African Forestry Company Limited and, to a much smaller extent, the former Department of Water Affairs and Forestry) of South African saw log plantations (the state owned about 30% of all plantations), whereas pulpwood plantations have generally always been privately owned. In 2000 a process of privatization of state-owned forests began: forests were split into various packages and tenders invited from the private sector. Some of these were sold to empowerment joint ventures with large commercial forestry companies. SAFCOL still owns about 11% of all plantations, via its wholly-owned

subsidiary Komatiland Forests, which is engaged mostly in the production of long-rotation pine. The Industrial Development Corporation (IDC) also has a significant holding in Hans Merensky Timber.

South Africa plantations are split among corporate, commercial and small-scale growers approximately² as follows (see Table 1):

Table 1: Timber growers by type of ownership

Type of Grower	Number of growers	Hectares	Percentage of total plantations*
Corporate			
Private	9	612,600	51.7%
Ex-SAFCOL	4	143,300	12.1%
Komatiland Forests (SAFCOL)	1	127,700	10.8%
<i>Sub-Total</i>	<i>14</i>	<i>883,600</i>	<i>74.6%</i>
Commercial			
Timber Farmers	1,300	232,780	19.6%
Timber Co-ops	4	23,600	2.0%
<i>Sub-Total</i>	<i>1,304</i>	<i>256,380</i>	<i>21.6%</i>
Small-scale growers	<i>20,000</i>	<i>45,000</i>	<i>3.8%</i>
TOTAL	21,318	1,184,980	100%

Source: Forestry South Africa, 2015

*Due to rounding, figures do not necessarily add up

There is clearly a very strong bias in the ownership of plantations toward large private corporate companies, which hold more than half of all plantations. (This group, in turn, is dominated by Mondi and Sappi, which – together with Komatiland – are the largest plantation owners in South Africa.)

An important – albeit small – component of forest resource ownership is outgrower schemes, in which South Africa is acknowledged to be a world leader. Sappi's *Project Grow* in particular is seen as a benchmark for small outgrower development practices. The initiative started in 1983, with three growers on eight hectares. It currently involves 4 138 growers, managing just over 14,000 hectares. Sappi provides technical advice, seedlings, funding and a guaranteed market. The project not only creates an opportunity for growers to earn money from the sale of the mature trees to Sappi, but also provides them with access to building material and firewood. Sappi is planning for a considerable portion of outgrower production to form part of its expansion in the Eastern Cape. (We have highlighted the importance of small outgrowers in forestry production because of the particular land ownership and tenure regimes in Tanzania and Mozambique, as discussed in greater detail in each of those country sections below.)

Probably as a result of the high-level of corporate plantation ownership, South Africa has the highest percentage of certified forests (Forest Stewardship Council certification) in the world – almost 82%. This is another differentiating factor compared to Mozambique and Tanzania. South Africa is recognised in the region as a leader in silviculture and forest management. Forestry graduates from South African universities are very highly regarded, and in high demand in forestry management in other countries. Forestry South Africa (FSA) reports that the average productivity per hectare of

² From FSA's membership, which covers about 92% of the market, it is likely that the balance is made up primarily of smaller commercial growers and small-scale growers.

South African plantations increased by 40% from 1980 to 2012, representing a gain of 4.1m³ per hectare per annum.

Geographical location of forest resources

The most important point about the geographical location of forest resources is the general requirement that large-scale timber processing facilities (such as sawmills or pulp factories) need to be located in relatively close or easy proximity to plantations or forests, as a result of the costs and logistics of transportation of raw materials. (The same requirement does not generally apply to activities such as furniture making.) This spatial constraint operates in *both* directions between forest and processing. That is, it would generally be too costly to locate a sawmill a long distance away from the wood source, but it may also not be feasible to establish a plantation in an area where a sawmill is not possible within a reasonable distance as a result, for example, of a lack of electricity. There is thus an important *spatial dimension to the commercial feasibility of forest resources* which is determined to a considerable degree by infrastructure – transport and energy being among the most important.

The additional geographic constraint on the location of plantations results from their soil and water requirements. Most importantly, plantations are never irrigated, and so require minimum annual rainfall of 750mm.

As a result of all these factors, South Africa has a strong geographical concentration of forest areas in relatively few areas. Most plantations (and timber-processing facilities) are in Mpumalanga and KwaZulu-Natal (each with around 40% of total plantation area, and to a lesser extent in the Eastern Cape (about 11%). More than 80% of South Africa's plantations are in these three provinces. Smaller plantation areas are in Limpopo.

Most of the wood produced in KwaZulu Natal is hardwood, destined for pulpwood. More than 70% of South Africa's hardwood production is in this province, reflecting the fact that most of the big corporate pulp processors are located in the province. This, in turn, reflects the importance of access to commercial ports for pulp (and wood chip) exports. In Mpumalanga and the Eastern Cape, the majority of the processing activities are around sawlogs, reflecting the traditional location of most of the country's saw mills, and proximity to Gauteng, which is an important market for sawn timber.

Afforestation/deforestation trends

The area of commercial plantations in South Africa reached a peak of 1.52 million hectares in 1996, compared to the current approximately 1.3 million hectares. New afforestation increased fairly rapidly through the late 1980s, reaching a peak of almost 45,000 hectares in 1990, and then declined rapidly in the 1990s, to well below 10,000 hectares per annum. In 2013 (the latest year for which this data is available) showed total plantation expansion of just 13,353 hectares from 2006. The majority of this (75%) was hardwood.

There are a number of reasons for this, the most important of which is probably the difficulties that forestry companies have faced in obtaining water licences. (The spark for the downturn was the severe 1991-1992 drought). Uncertainty over land claims in areas suitable for forestry plantations (Mpumalanga and Limpopo) have also contributed to a reduction in investment.

The only areas where significant new plantation afforestation is planned and/or taking place is the Eastern Cape (where 100,000 hectares is planned) and KwaZulu Natal (50,000 hectares planned). Small outgrowers will benefit from a portion of this expansion.

Deforestation of woodlands is taking place in South Africa, due to population and land use pressure, but at a much lower pace than in neighbouring countries. Estimates are that around 30,000 hectares of woodlands have been lost since 1990, a tiny fraction of the total area of woodlands.

2.1.2. Forestry Sector

Overview and demographics

The total forestry sector (i.e. including downstream processing) contributes between 1% (IDC, 2014) and 2% (FSA, 2015) to the total GDP of South Africa, but almost 10%-12% to manufacturing GDP (with pulp and paper being the most significant contributor). The sector is particularly important in the broader economy, however, for two factors: rural employment and export earnings.

Total employment across the sector (including paper recycling) is estimated at around 261,000. The single largest employer in the forestry sector is forest management itself: estimates are that almost 72,000 people are employed in forestry operations. These are important jobs in rural areas that generally have few employment options. About 18,000 people are estimated to be employed in sawmilling, 43,000 in pulp and paper and around 26,000 in furniture manufacturing. Many of the jobs in the forestry sector are relatively low-skilled, which further underscores their importance.

Table 2: Employment in the Forestry/Wood Products Sector (2015)

Sub-Sector	Employment
Forestry Operations	71,774
Wood processing	63,103
Sawmilling	18,218
Pulp and paper production	43,247
Paper recycling	38,742
Furniture production	26,400
Total	261,484

Source: the dti, 2016

There are however, some indications that employment in forestry operations may be under pressure: Forestry South Africa (FSA) reports that there has been a significant move towards outsourcing in the sector, and they report that contractors are now the biggest employer in forestry. There has also been a move towards the mechanisation of operations.

The forestry sector is an important generator of export earnings, most notably pulp, as well as woodchips (exported to Japan where they are used for paper manufacture). In 2014, the forestry sector recorded a positive trade balance of R5.89 billion. By far the biggest contributor to this was pulp, with a positive trade balance of just over R7.5 billion. Solid wood and other forestry products recorded a R1.85 billion positive trade balance. Paper however, has a negative trade balance, with imports outstripping exports by around R3.5 billion. The recent depreciation is positive for the export of wood products such as furniture, but a shortage of timber means that the overall sector is not in a position to benefit significantly from the weaker exchange rate.

Timber production and use: key drivers and market trends

More than two thirds of the output of South African plantations goes towards pulpwood (i.e. as input for the various types of pulp and paper production. This category includes woodchips that are

produced here and exported for pulp production in Japan). The share of pulpwood in timber production compared to sawlogs has increased steadily over the past twenty years, and most of the new afforestation over this period has been hardwood. This reflects the strong international demand for pulp and paper, relative to other timber uses. In addition, the shorter rotation period of hardwood makes it more attractive to smaller growers, who have to wait much shorter periods to realise cash flows from their trees. (This is why most outgrower schemes focus on hardwood).

Table 3 shows the long-term trends in types of roundwood production ex plantation, from 1979 to 2013. It illustrates quite clearly that most of the pressure on timber supply is in respect of pulpwood. This has important implications for the kinds of plantations that are required in response, as well as the potential to support outgrowers.

Table 3: Roundwood production ex plantations by volume (m³)

Type of Product	Percentage change: 1979 - 2013
Sawlogs and veneer logs	+23.6%
Pulpwood	+203.7%
Mining Timber	-10.1%
Poles	-22.67%
Other	-22.3%
TOTAL	+93.7%

Source: Forestry South Africa and own calculations of volume based on standard industry conversion rates

Table 4 shows sales of roundwood into the main categories of use by volume and value from plantations.

Table 4: Roundwood sales from plantations by volume and value (2013)

Product	Volume ('000m3)			Value	
	Softwood	Hardwood	Total	R millions	% of total
Sawlogs and Veneer Logs	4,367	93	4,460	1,742.3	25
Pulpwood	2,793	9,229	12,022	4,787.4	68.8
Mining Timber	0	638	638	146.2	2.1
Poles	56	306	362	205.1	2.9
Other ¹	48	317	365	74.3	1.1
TOTAL	7,264	10,583	17,847	6,955.3	100

Source: Forestry South Africa, 2015 and own calculations

¹ The main component of "other" is charcoal and firewood

The data in Tables 3 and 4 underscore the importance of pulpwood: it made up 67% of volume and almost 69% of the total value of sales. In the same year, pulp exports totaled R8.7 billion and paper exports totaled R7.9 billion. In addition to input for pulp mills, pulp wood is also destined for wood board mills and wood chipping plants. Almost 72% of plantation output goes to pulp, paper and board mills.

Table 5 indicates volumes and value of the various products from primary processing facilities.

Table 5: Sales ex primary processors by volume and value (2013)

Product	Volume ('000m3/tons)		Value	
	Unit	Volume	R millions	% of total
Sawn Timber	m ³	1,588	4,615.2	22.7%
Pulp	Tons	2,233	11,170.4	55.0%
Wood based panel products	m ³	1,154	351.8	1.7%
Mining Timber	Tons	386	1,955.8	9.6%
Poles	m ³	418	545.9	2.7%
Charcoal	Tons	58	67.2	0.3%
Chips/Mill residues	Tons	2,299	1,472.7	7.2%
Firewood	Tons	50	134.3	0.7%
TOTAL			20,313.3	100%

Source: Forestry South Africa, 2015

NOTE: This data excludes informal primary processing units, but these make up only a very small fraction of total primary processing in South Africa.

If we compare the information in Table 5 with that in Table 4, we can see that the value added from plantations to primary processing is in the order of R13.3 billion.

Plantation forestry in South Africa is characterised by a high level of vertical integration: many plantation owners are also primary and/or secondary processors. Hans Merensky and York Timbers are good examples in sawn timber, PG Bison in Fiberboard, and Sappi and Mondi in pulp and paper.

This means that the output of plantations is highly correlated with developments in primary and secondary processing, with wooden furniture being a noteworthy exception. It also means that many of the primary and secondary processing sectors obtain their market advantage through the ownership of plantation resources (and thus obtaining their raw material at a relatively competitive price). Thus plantation ownership is often the key factor for viability of much of this processing.

The associated factor is that plantation ownership is an effective barrier to market entry in the primary and secondary processing sectors: if the majority of the plantations are owned by companies that process the timber themselves, there is very little opportunity for new smaller processing companies to obtain timber or suitable quality and/or price. This issue is discussed in more detail below.

Trade

The forestry sector as a whole runs a positive balance of trade. Forestry products are an important contributor to South Africa's exports, most particularly pulp.

Table 6 sets out export and import data for the main categories of forest products, for 2014. More detail on each of the products is contained in the value chain analysis in the next chapter.

Between 1992 and 2014, imports grew marginally more than exports (11.9% and 10.9% respectively), and the positive trade balance grew by almost 9%. The biggest percentage growth in imports over that period was pulp (for paper), reflecting local supply constraints.

Table 6: Imports and exports of major forestry categories (2014)

Product	Value (R millions)		
	Imports	Exports	Trade balance
Pulp	1,286.4	8,660	+7,373.6
Paper	11,325	7,893.7	-3,431.3
Solid Wood	4,304.5	5,538.3	+1,233.7
Other	19.5	733.3	+713.8
TOTAL	16,935.4	22,825.2	+5,889.8

Source: Forestry South Africa, 2015

2.1.3. Regulatory/Institutional Environment

Forestry in South Africa is a highly regulated industry, subject to a number of Acts of Parliament that regulate land and water use, most notable the National Forests Act (84 of 1998) and the National Water Act (36 of 1998). It is forestry's use (or perceived use) of water and the corresponding regulatory environment that is most significant for establishing new plantations. Although plantations are not irrigated, they are perceived (particularly hardwood plantations) to be a significant drain on groundwater, and thus water catchment and the integrity of aquifer reserves. As a result, all new plantations must apply for a water licence, which is an onerous and lengthy process. The overall environmental impact assessment (EIA) process for new plantations (including water license application) has been blamed for the very slow pace of new afforestation, which fell considerably after the prolonged drought of the early 1990s increased opposition to plantations.

It has been pointed out (Genesis, 2005) that there is no good reason for why plantations have been singled out for the water licence requirement, since there is little in the way of empirical evidence to support the idea that forestry is more water intensive than other crops. Genesis (ibid) suggested that forestry only uses about 6%-7% of total available water, whereas irrigated agriculture uses more than 50%. The macroeconomic impact of singling out forestry for water use is thrown into relief when we consider the export value of timber products relative to other agricultural products. A good example would be the sugar industry, a significant part of which is located in KwaZulu-Natal. Sugar farming is heavily reliant on irrigation, particularly in drought years. Similar numbers of people are employed in sugar farming as in forestry production. In 2014, exports of forestry products was almost R23 billion, compared to just under R6 billion for sugar. Despite numerous call by both industry and government departments for a review of the water use licensing regime for forestry, most particularly to make the entire process operate more efficiently and quicker, very little progress has been made in changing the system.

Forestry and associated processing sectors have been identified by the South Africa government as having potential to support economic growth and job development. There has been a particular focus on supporting new, smaller entrants into the sector. In 2010 the IDC set up a R20 million forestry development grant to support the development of community-owned forestry projects. The DTI and IDC have recently developed a strategy to support small-scale sawmilling in the Eastern Cape, where the most significant new afforestation will be taking place. There have also been numerous plans to support the development of the domestic wood furniture sector.

2.1.4. Key Sector Opportunities

There is a clear demand for timber – particularly for pulp, but across almost all end uses. This means that if the supply of timber is increased, existing processing capacity can take almost immediate advantage of it. The implication is that the sector has a high *latent potential* to create employment and – most notably – to increase exports and make an important contribution to the national balance of payments. In terms of plantation expansion, where soil and rainfall requirements are met, South African plantations have high yields relative to those in most other part of the world: the faster growth of trees means that local plantations can be two or even three times more productive than those in Europe and North America.

Relative to many other countries – and particularly those in other Southern African countries – South Africa has a strong advantage in the production of forestry skills and in commercial forestry research, including plant breeding and genetics. South African universities are seen as clear leaders in forestry skills, and South African forestry graduates are in high demand in other countries. The result is that South African plantations produce very much higher yields and quality of timber than other Southern African countries (including Mozambique and Tanzania). This quality gap gives South Africa a clear advantage for many timber products. As already noted, South Africa also has a very strong advantage in certified plantation management, and has the highest percentage of certified plantations in the world. This is an important factor since there is a growing global demand for certified products, including for products derived from pulp fibre (a crucial component of the local forestry processing sector).

2.1.5. Key Sector Constraints

The single most important constraint to the local sector is supply of raw materials, most notably for the fibre, pulp and paper processing sectors. Import of inputs for this market is simply not feasible. Logistics and associated costs also mean that importing roundwood for most other processing sectors is not feasible (furniture is the one exception). Supply of raw material is also an important factor preventing the meaningful entry of new – especially smaller – wood processors into the market.

The implication is that there are three important components of the raw material shortage that need to be considered by policymakers: the first is that there is a general shortage of timber; the second is that the greatest supply-demand gap is in pulpwood (i.e. primarily hardwood); and the third is that there is a shortage of material for particular users – in this case small-scale sawmillers and processors. That is, there might be a significant expansion in hardwood plantations by one of the big pulp manufacturers, which would impact positively on that sector, but this afforestation will not have any impact on the ability of emerging sawmillers to source affordable and quality input.

As already highlighted, an important constraint to plantation expansion is the onerous regulatory environment around EIA approval, particularly the granting of water licences.

The second important market constraint is the relatively low timber recovery rates, currently below 40%. This can be compared to an international benchmark of around 60%. The implication is that the supply of raw material, and the efficiency of primary processing, could be significantly improved by raising timber recovery rates to international best standards. The main reason for the low timber

recovery rates is the generally old and outdated capital equipment used by the domestic sawmilling industry, and the lack of funds for recapitalisation.

Another constraint in the South African forestry sector is the lack of policy focus – and thus development interventions – on *woodlands*, as opposed to plantations. Although South Africa does not have natural forests to the extent of the other two countries in this study, there are considerable areas of forest cover, many of which are located in very poor rural areas. In addition, there are many opportunities to leverage forest resources outside of the plantation model, as seen in countries like Tanzania (and as discussed in more detail below). These resources offer a wide range of livelihood strategies, but these possibilities are seldom included in South African analysis or policy.

2.2. Mozambique

There is a significant problem with forestry data in Mozambique. Little data is kept by government, and what data they do collect is often not made publicly available. The country submits data in terms of its FAO requirements, but these data submissions are often years out of data (i.e. data is submitted for a period many years prior) and many of the data sets are simply missing. The FAO (2015) report highlighted the fact that there is little accurate data available on forests in Mozambique, and no way of verifying much of the published data. It also appears that reporting by the National Directorate of Land and Forests (DNTF) has deteriorated over the past 15 years. Since 2010, its reporting has failed to disaggregate many data sets to provincial level, and its reports have become shorter with less data. No accurate national forestry data dealing with indicators such as licensing, timber production, processing or timber exports is publicly available.

The very high levels of illegal logging and corruption in the forestry sector (discussed below) contribute to official trade data for forestry products that is impossible to verify. Most of the information in this section was obtained from reports written by multinational entities such as the various United Nations-affiliated organisations, the EU's FLEGT programme, non-governmental organisations (NGOs) operating in the forestry sector, reports published by the private companies that are invested in the sector, interviews and various media reports.

2.2.1. Forest Resources

Southern and Eastern Africa are considered to be among the best regions globally for forestry, given their warm climate and generally good rainfall. About half of Mozambique is covered by natural forests (comprising more than 50 million hectares), with miombo being the most common type of forest cover. Trees in natural forests are divided into a number of classes, each of which is subject to different export regulations and taxation. The main classes are precious, first, second, third, fourth, construction third, construction fourth, fuel wood and others. Several of the species of wood found in Mozambique – such as African blackwood and black ironwood – are extremely valuable and rare woods used in the making of high-end furniture.

All land in Mozambique (including natural forests and land available for plantations) is owned by the state, which can grant rights of occupation and use, but not ownership. Different levels of government (local, provincial and national) have different levels of authority for granting these rights. In addition, certain rights of occupancy and use are only available to Mozambiquan nationals. A land use right (DUAT) – including the right to establish plantations – can be acquired in one of

three ways: customary occupation (i.e. local communities that have a traditional claim to the land); good faith occupation (where a Mozambiquan has occupied the land for at least 10 years without any complaints); and a formal lease (50 years) granted by the state. This last is the only way for foreign investors to access land in Mozambique. The various land rights as they pertain to the forestry sector are discussed in more detail below.

About two thirds of the population lives in rural areas and natural forests are an important source of diversified household livelihood strategies. Most rural people use firewood as their main energy source, and forests are also a source of food and honey. As much as 70% of the total forests of Mozambique are suitable for timber production, making it one of the country's most significant resources for economic development. This has particular importance in light of the fact that in 2014 Mozambique was ranked 180 out of 188 countries in the UN Human Development Index.

Natural forests in Mozambique are in decline, although the extent of the deforestation is difficult to determine accurately. One estimate is that deforestation is about 0.58% per annum (IIED, 2013). There are a number of reasons for this, including increased demand for land for agriculture and other purposes, rising demand for firewood and charcoal, forest fires and illegal logging. The latter is most likely the most important contributor to deforestation. Afforestation plans are mainly around encouraging the development of commercial plantations of eucalyptus and pine.

FSC certification is relatively new in Mozambique: prior to 2000 there were no certified forests, and currently there are only three FSC certified forests in Mozambique. One of these is a plantation (Green Resource's Niassa plantation) another is a natural forest and another is a controlled wood certificate for Class 1 timber. There is reportedly at least one company in Mozambique which is aiming to obtain (natural) forest concessions to manage under FSC certification. (It should be noted that many of the new plantations are aiming for FSC certification. We should thus expect that the number of certified forests will increase steadily over the next 20 years, although certification of natural forests will probably continue to be relatively low, given the various problems around illegal logging discussed in more detail below.)

2.2.2. Forestry Sector

The forestry sector in Mozambique can be divided into two distinct parts: that which covers the extraction of timber from existing natural forests, and plantation forestry. By far the biggest component of the sector at present is the former, but it faces a considerable number of challenges. The existing plantation sector in Mozambique is small, but with considerable investment over the past five years, which should see its contribution increasing significantly, as plantations begin to mature and the associated primary and secondary processing sectors start meaningful operations.

The aim of these new investments is primarily to produce forestry products for export, although domestic demand will also be addressed. Each of these parts of the forestry sector are currently, and will in future, integrate into and impact on regional value chains in different ways, and each is discussed in more detail below.

Forestry sector based on natural forests

Natural forests in Mozambique are allocated to one of three categories for the purposes for forest management:

- **Productive forests** are those deemed to contain commercial timber, and make up the biggest category of forests (around 26 million hectares, or about half of all natural forests). Access to these forests is either via a Simple Licence or a concession. Simple Licences are available only to Mozambiquan nationals who have local community approval, and set a limit of 500m³ per annum of harvested wood. There is no obligation on Simple Licence holders to develop processing facilities.

Concessions are usually granted for a period of 10 to 20 years, and may cover many thousands of hectares of forest. They may be granted to local or international companies, and also require local community approval. The concession agreement includes the obligation on the concessionaire to develop a management plan for the concession and to establish a processing facility. In theory this is supposed to support the development of a primary processing industry to benefit timber in Mozambique. In reality it seems that the requirement of a management plan is generally not enforced, and many owners of concessions have not established any processing facilities. There is a split in authority for the granting of forestry concessions: Concessions of 20,000 hectares or less can be approved at provincial level, those up to 100,000 hectares need approval from the Ministry of Agriculture, and those above 100,000 hectares require approval from a Ministerial Council.

Simple Licences are thus much cheaper and easier to obtain than concessions, and in practice many loggers will fund a group of Mozambiquans to obtain these, and then operate under these licences. There are currently some changes being proposed to Simple Licences, to set a maximum period of five years for the licence.

- **Protected areas** are set aside for conservation, biodiversity and/or water catchment purposes. Although they may not legally be commercially exploited, protected areas often incorporate human settlements. Protected areas cover around 13 million hectares.
- **Mixed use** areas are areas that encompass both forest and other land types, sometimes in competition with each other. Mixed use areas make up around 14 million hectares

Most of the wood extracted from natural forests is either exported as whole or very basically processed logs (the most lucrative commercial activity), used for firewood, or for the manufacture of charcoal.

It is very difficult to determine how many people are employed in the natural forest sector, due to a lack of official statistics, the informality of many enterprises, the illegality of many enterprises, and the multiple livelihood strategies of many rural households. Government estimates that around 18,000 people are employed in the sector, but this is probably a gross under-estimation, and most likely only captures data from the biggest formal enterprises. Forestry is dominated by small and micro-enterprises, many of them unregistered. Some research (Nhancale et al, 2009) suggests that small enterprises make up more than 95% of all enterprises in the forestry sector, and account for about 80% of sector employment.

Plantation-based forestry sector

Plantations in Mozambique (made up of exotic plantings) were established on a limited basis (less than 100,000 hectares) under Portuguese colonial rule. The main purpose of these was to supply

construction timber to the local market. Many of these plantations fell into neglect after independence, and Mozambique has since imported most of its industrial and commercial timber and paper (much of that coming from South Africa and Swaziland). However, over the past 10 years there has been a strong increase in interest from several international companies to establish new plantations, reflecting growing international demand for timber products (mostly pulp) and the excellent growing conditions in Mozambique. These companies have obtained access to more than two million hectares of land for this purpose, although most of the plantation are still in the planning stage or only fairly recently planted. The most recent FAO report on Mozambique estimated that plantations would cover about 75,000 hectares in 2015. Most of the plantations are planted with pine or eucalyptus (the majority of the wood is destined for fibre and pulp). Obtaining a DUAT (land use licence) for a plantation is contingent on committing to setting up a local processing facility and all of these big international companies are thus planning to set up processing facilities (for a variety of timber products) once the plantations reach harvesting age. Over the next 20 years, if these investments mature as expected, Mozambique will most likely greatly reduce its imports of timber-based products and derive foreign earnings from the export of processed products, most notably pulp.

The key foreign companies involved in the plantation sector are Green Resources (a Scandinavian company), Navigator (previously Portucel – based in Portugal), New Forest (UK) and the Global Solidarity Forestry Fund (GSFF). Some of these companies (such as Green Resources and GSFF) are incorporating carbon credits under the available offset schemes as an integral part of the funding of their expansion into Mozambique. The International Institute for Environment and Development reports that none of these companies is seriously considering significant outgrower schemes, due to the perceived costs of managing them (IIED, 2013). Much of the new plantation expansion is located in Niassa province, in the extreme northwest of the country. Niassa is bordered by Tanzania to the north and Malawi to the west. It is the most sparsely populated of Mozambique's provinces. There is a railway line covering the 800 kilometres between Niassa's capital (Lichinga) and the Indian Ocean port of Nacala. It should be noted that there has also been a move into Niassa by large agricultural producers, producing a variety of crops – mostly for export. This investment may increase competition for land for future forestry expansion.

The second largest area of new plantation is in Zambezia province (located south of Niassa, with a long stretch along the Indian Ocean). Both Niassa and Zambesia provinces have been sites of increasing recent rebel activity by Renamo. Approximately 10,000 refugees have moved across into Malawi over the past twelve months.

Manica Forest Industries (IFLOMA) is one of the long-established plantation operators in Mozambique. The company was privatised in 2004: 80% of the shares are held by South Africa's Komatiland Forests (a wholly-owned subsidiary of SAFCOL) and the other 20% are held by the Mozambiquan government. Until very recently IFLOMA has been the biggest plantation operator. IFLOMA manages about 11,000 hectares of plantations and operates one of the biggest sawmilling operations in Mozambique. Most of the plantations are eucalyptus. IFLOMA has formed partnerships with a small number of local communities to set up their own small plantations, but these also appear to be in the very early stages of development.

Portucel Mozambique (a wholly owned subsidiary of the Navigator Group) is probably the biggest single investor in the Mozambiquan forestry plantation sector. They have received access to 183,000 hectares in Manica Province (central western part of the country, bordering Zimbabwe) and 173,000 hectares in Zambesia Province. Their main purpose is to produce pulp and paper.

Trade in Forestry products

It is very difficult to determine accurately the foreign trade in forestry products in Mozambique, due to high levels of informal and illegal activity, and poor record keeping and information management by government. These factors not only make it difficult to determine total volumes of trade, but also to differentiate among different types of products. For example, it is illegal in Mozambique to export unprocessed logs of either precious or Class 1 species of timber.

In 2007 the government passed a decree to make processing of this timber in Mozambique mandatory. However, there is strong demand for this wood (mostly from China, where most of it is used to manufacture reproduction Chinese antique furniture which is sold within China) **and** there is a strong preference for unsawn wood, given the differences in sawmilling techniques between the two countries. This is so significant that sawn timber attracts a *lower* price per m³ from Chinese buyers than whole logs of the same species. The ban on the export of logs has thus created a strong incentive for a variety of illegal or semi-legal activities, which impact on trade data. These include:

- Classification of logs as different (i.e. tradable) species.
- Rough sawing: “rough” sawn timber may be exported as processed timber (also under a 2007 decree), and so many loggers are simply splitting logs in half and then exporting them as “sawn” timber. This decree – together with the mandatory processing decree from the same year – is probably the main reason why there was an enormous increase in sawn timber exports from Mozambique from 2008. This does not represent an actual change in exports, just an incentive to report them differently. This allegation is supported by trade data from Mozambique’s main trading partners – particularly China, which reflect high levels of log imports from 2008, not sawn timber.
- One NGO reported that some loggers were making very perfunctory carvings on the outside of the logs, and then exporting them as “wooden art”.

More than 90% of all timber exports from Mozambique go to China. Logs and sawn timber (much of it illegal) are also exported to neighbouring Tanzania. The annual volume of that trade is estimated at around 12,000m³. A relatively small amount of timber is exported to South Africa, mostly hardwood that is used for parquet floors, doors, windows and some furniture. Almost no timber is exported to the EU from Mozambique and even that small trade is likely to come under pressure as a result of the 2013 EU regulation on illegal timber.

Mozambique’s main timber-based product imports are paper (55% by value – almost US\$50 million) and more than two thirds of this comes from South Africa. Wooden furniture is the second most important timber import, with China now the biggest supplier, having overtaken South Africa. Imported furniture is generally more expensive than that produced locally, but there seems to be a high premium place on “foreign” furniture. Other timber imports include processed pine for building (mostly from South Africa, but also from Malawi). Increasing economic growth in Mozambique is

supporting a growing construction sector, which in turn has increased exports for joinery products, most of which come from South Africa.

Trade in wood and timber products is limited by infrastructure: although Mozambique has a number of ports suitable for timber exports – Maputo, Beira, Nacala and Pemba – it has a generally poor road infrastructure, particularly in the northern part of the country where much of the plantation expansion is planned. The best road network is between Mozambique and South Africa. Railway coverage is limited.

Investment in the forestry plantation sector by South African companies

The sole significant South African participant in the Mozambiquan plantation sector is IFLOMA, which is 80% owned by Komatiland Forests.

A memorandum of understanding (MOU) between South Africa and Mozambique is in place, the purpose of which is to support “co-operation in forestry based industries.” The idea behind the MOU was to encourage private South African companies to invest in the Mozambiquan forestry sector, based on its perceived potential. However, to date no meaningful new investment has materialised, despite the fact that companies from other countries (as detailed above) have invested in Mozambique. Some of the reasons for this emerged in an interview with Sappi: the company indicated that it had been interested in developing plantations in Mozambique, based on the research emerging from that country which seemed to suggest that large amounts of suitable land was available. The incentive for Sappi was to create a new source for pulp, and – in keeping with the approach adopted by companies like Portucel/Navigator – the plan was to establish plantations and then later build a pulp processing mill in proximity to these. The initial plan was to acquire 150,000 hectares of land for plantation development, about half of which would be set aside for small outgrowers. The company identified the northern Zambesia province as the place where it would be looking for land, based on land quality and optimum growing conditions. However, before any investment was made it commissioned its own research on the actual potential for establishing a plantation. (This is standard practice for the company as preparation for any big capital investment).

This research showed quite clearly that much of what the company had been led to believe about land availability and the opportunities for plantation development in Mozambique were in fact inaccurate. The most important issue was around the availability of land. There is a clear perception that there is a great deal of land available for forestry in Mozambique, but the research found that this wasn't the case, certainly not in the province where there did the study. Although there appeared to be a lot of land, it was certainly not unencumbered: the company had been led to believe that the local community practised slash and burn subsistence agriculture, regularly abandoning plots of land and moving to new sites. The reality was very different: a significant portion of the local communities were in fact permanent farmers, farming plots of around eight hectares on a rotational basis (i.e. the perception of “abandoned” land was untrue). Further, most of these farmers were small-scale *commercial*, rather than subsistence farmers, and there was a very efficient informal market network operating in the area. Commercial plantations require large blocks of land to be efficient, and the only way that Sappi could have achieved this in its proposed site would be to relocate large groups of people, which it did not think was an option. The company also noted that the local communities were extremely suspicious of the researchers once they

determined that they were from a forestry company. There seems to be a growing fear in rural Mozambiquan communities that these companies are in fact planning to dispossess them of their land. (It should be noted that the company believes that the idea that there are large amounts of land “available” is just as erroneous in many other African countries that they have investigated for potential plantation sites). The type of land required by forestry is fairly high-value agricultural land which receives good rainfall. There is already strong competition for this kind of land in most Southern African countries, and this competition is likely to increase as pressure on land increases. Even if urbanisation increases (i.e. rural populations move off the land), rising demand for food is likely to maintain the demand for high-value agricultural land.

Other issues that Sappi raised included the perception that developing a plantation and processing plant will be relatively cheap in Mozambique, because labour is relatively cheap. This is not, however, the case. Wages might be low, but it is a dollar-based economy and an expensive place to do business. It also pointed out that an international publicly listed company like Sappi has to comply with a large number of “good business” practices which many companies operating in Mozambique are not bound by. This gives the latter group a big advantage in doing business.

2.2.3. Regulatory/Institutional Environment

The regulatory environment (including the implementation of legislation) around the forestry sector in Mozambique could best be described as “complex”. This assessment refers particularly to the natural forest sector (plantations and associated activities are still in their infancy), and it poses significant threats to the sustainability of Mozambique’s natural forest reserves, as well as to the ability of the government (and local communities) to benefit from these resources. The main problem is not legislation itself, but rather the implementation and enforcement thereof, which is extremely patchy. The low level of implementation and enforcement of legislation reflects both low levels of state capacity, as well as reportedly relatively high levels of corruption.

Production forests fall under the DNTF, part of the Ministry of Agriculture. DNTF is responsible for policy, information management and the licensing of large (mostly foreign) investments and is considered to be a weak and under-resourced institution, highly dependent on donor funding (FLEGT, 2014). The biggest failing of the DNTF is in the management of the trade in timber. It is estimated that the Mozambiquan government is losing in excess of \$100 million each year in lost taxes and royalties from the forestry sector. Improved management of tax collection in the forestry sector would therefore generate significant returns for the Mozambiquan government.

Despite the fact that forest concessionaires are required to set up processing facilities, this does not seem to happen in many cases, and there is little enforcement of the regulation. We have discussed the very real problems that Mozambique has with enforcing the ban on the export of Class 1 logs. In August 2016, the government announced that it was planning to legislate a ban on the export of all logs from Mozambique, in an attempt to reduce illegal logging. Given that much of the smuggling of wood appears to be via the classification of logs as processed timber – rather than other species – this is unlikely to have a significant impact on illegal logging. It will, however, reduce exports of “legal” logs, and may support investment in some primary processing.

Mozambique has a number of investor incentive schemes in place that benefit the forestry sector, including the designation of Zones of Rapid development where investors receive a number of tax

benefits. The Tax Incentive Code of 2009 sets out a number of tax exceptions and incentives in targeted industries, including forestry. Decree Law 30/2013 sets out a variety of incentives for plantation development. These may have contributed to making investment in the sector more attractive, but they were not cited as an important issue in our interview with Sappi.

2.2.4. Key Sector Opportunities

There is little doubt that Mozambique has significant plantation forestry potential, given the large areas suitable for the production of the short-rotation hardwood that is in high demand for paper and fibre pulp. This potential is evident in the significant foreign investment that has come into the sector over the past five to seven years. The Mozambiquan government has placed a strong emphasis on beneficiation, and potential investors are required to commit to developing domestic processing to obtain access to land for plantations. This pro-beneficiation stance will be a key factor building the sector. If the Mozambiquan forestry sector can overcome its constraints, it will most likely be a leading pulp producer by 2030.

The outlook for the natural forests is much bleaker, given the state's apparent inability to reduce illegal logging and deforestation. It is likely, therefore, that the importance of the plantation sector versus the natural forests sector will increase over the medium to longer term.

2.2.5. Key Sector Constraints

The main constraints for the plantation sector are infrastructure (particularly roads, but also electricity in more remote areas) as well as the resurgence of conflict with Renamo. The recent downgrading of the country's sovereign debt rating is also a negative factor for investment. However, it should be remembered that plantations represent a long-term investment, and thus that investors take a 10- to 15-year view.

For the natural forest sector, development is constrained by the "contamination" of illegality. The high level of illegal activity and perceptions that government has no control over the sector will probably make it an increasingly unattractive investment option for companies which need to demonstrate ethical business practices and provide proof of provenance of products to enter markets such as the EU. (The Spanish timber federation recently advised its members to avoid any timber from Mozambique, because of the high risk of being in breach of the 2013 EU regulation.)

2.3. Tanzania

There are problems with access to accurate and up-to-date data on the forestry and timber products sector in Tanzania, due in part to low capacity in government (which limits the financial resources available to undertake regular forest inventories), but mostly because of the very high levels of informality in the sector. Very few sector participants are registered companies. Most of the information in this section was obtained from existing research and interviews with the Forestry Trust of Tanzania.

2.3.1. Forest Resources

Tanzania is relatively heavily forested. Total forest area (natural forests, plantations and woodlands) is estimated to be around 48 million hectares (UNEP 2015), which represents about 50% of the surface area of the country. By far the biggest component of this is natural forests, which contain a

high percentage of hardwoods, some of them very valuable (such as sandalwood). More than three quarters of Tanzania’s population live in rural areas, and are highly dependent on forests for a range of products and livelihood strategies. Per capita consumption of wood is estimated at about 1m3 per annum. Much of this is in the form of firewood and/or charcoal. About 90% of total energy consumption in Tanzania is derived from biomass.

In terms of potential for developing plantations, the best growing conditions are found in the Southern Highlands, where annual rainfall is above 2,000mm per annum.

Deforestation is estimated to be around 1% of total forest area per annum (Dinh and Monga, 2013). There is reportedly illegal logging activity, but nowhere near the extent to which this is taking place in Mozambique. The main reason is the lack of relatively easy access to deep water ports from which large amounts of logs can be transported. The main factors behind deforestation are not illegal logging, but the expansion of agriculture, forest fires and poor forest management (UNEP 2015).

2.3.2. Forestry Sector

The forestry sector is estimated to contribute about 3.3% of Tanzania’s GDP and about 3% of paid formal wage employment (FLEGT, 2014b). The impact on households and the informal sector is more significant: it is estimated that the forestry sector provides employment of one sort or another for about three million people (or between 8% and 10% of the total population). This includes formal employment in the forestry sector, as well as self-employment in a range of forest-based industries, including wood harvesting, honey production and basic wood processing. It is also estimated that forestry is the sole or major livelihood for about 800,000 people (Dinh and Monga, 2013).

Table 7 shows the relative contributions of the various sub-sectors of the forestry sector to national GDP. The very high share of charcoal is a good indication of the generally very low level of value-added activities in Tanzanian forestry: clearly they are not taking advantage of their very high-value forestry assets. One of the reasons for this is that forestry (despite the considerable natural resource) is not considered a high-growth sector for the government.

Table 7: Contribution of forestry sub-sectors to GDP in Tanzania (2010)

Sub-sector	% of 2010 GDP
Charcoal	2.89
Plantation Timber	0.97
Natural Forest Timber	0.15
Tobacco fuel wood	0.01
TOTAL	4.01

Source: GAI, 2014

The forestry sector is dominated by informal enterprises, and even registered companies often do not comply with regulation. A 2014 study (GAI, 2014) found that only four forestry companies in Tanzania had paid any taxes for the period 2007-2014.

Natural forests

About 70% of natural forests in Tanzania are designated as “productive”, while the remaining 30% are designated as “protected”. A significant portion of natural forests are made up of relatively valuable hardwoods, such as teak.

Much of the economic activity around forestry – particularly for rural households and smaller enterprises – is centred around natural forests. They are the main source of firewood and charcoal. More than 90% of Tanzanian households use biomass as their main source of energy. Natural forests are used by communities through a complex system of tenure and occupation rights, discussed in more detail below.

In 2007, the government instituted a ban on the export of sandal wood, and all logs with a diameter greater than 10 cms, in an attempt to reduce illegal logging.

Plantations

The Forestry Development Trust (FTD) estimates that by 2025 Tanzania’s demand for industrial wood will be around 3.7 million m³ per annum, and that existing plantations will be able to only supply less than a third of that. There is thus a concerted drive to establish new plantations to address the shortfall, but progress to date has been patchy, largely because of the difficulties that investors face in accessing land through Tanzania’s extremely complex land tenure regime, together with poor infrastructure. Our interviews suggested that there is a lot of potential for plantation development in the Southern highlands, but the lack of suitable infrastructure – particularly roads – is a limiting factor. There is no significant long-distance cargo railway system in Tanzania at present, although a Chinese consortium is reportedly in process of constructing a trans-continental line.

Increasing numbers of small farmers are planting timber in the Southern Highlands, much of it eucalyptus, but the quality of these trees is generally low. Most of these farmers have no access to quality inputs or the skills to produce high-quality timber. There are also no comprehensive market access plans that will allow these small-scale farmers to access reasonable markets. Instead they are highly dependent on travelling traders, who generally offer low prices that they are forced to accept.

The state is still the largest plantation owner in Tanzania (see Table 8), although most harvesting is done by private companies, under a harvesting permit system.

Table 8: Government Forest Plantations in Tanzania

Plantation	Area (ha)	Growing Stock (m ³)
Sao Hill	41,604	10,231,598
Meru/Usa	5,710	419,089
North Kilimanjaro	6,200	394,068
West Kilimanjaro	6,019	302,987
Buhindi	3,210	246,669
Kiriwa	2,637	118,735
Rondo	2,599	28,105
Kawatire	1,956	128,243
Rubya	1,906	125,933
Shume/Magamba	3,804	317,423
Longuza	2,450	155,892
Ukaguru	1,700	18,897
Mtibwa	1,410	87,271
Matogoro	868	22,833
Ruvu-Woodfuel	633	--
Rubare	285	36,649
TOTAL	82,991	12,643,392

Source: FLEGT, 2014b

There are 16 active government plantations in Tanzania, covering only about 80,000 hectares and they are the main source of industrial wood in the country. Plantations currently are planted mostly (95%) with softwood (pine and cypress), destined for sawmilling (construction timber), limited amount of paper, wood panel products and wooden poles. (Hardwood requirements are currently supplied mostly from natural forests or from the few private hardwood plantations such as those managed by Tanganyika Wattle Company – TANWAT). The biggest of these government plantations is the Sao Hill Plantation, accounting for more than 70% of all plantation timber harvesting in Tanzania. Production of timber from Sao Hill has declined steadily since 2008, despite rising domestic timber demand, due to over-harvesting in the past and poor plantation management. Reports suggest that as long as 10 years ago Sao Hill management had been informed that then levels of harvesting were unsustainable, but they continued to over-issue harvesting permits.

Most of the timber from Sao Hill goes to small and medium sawmillers, although a portion of the production is allocated to Mufindi Paper. Declining supply of industrial wood has put upward pressure on timber prices in Tanzania.

TANWAT is the oldest privately-owned forestry company in Tanzania. It manages around 14,000 hectares of plantations which it has indicated it wishes to expand, but has been unable to access land for this purpose (FLEGT, 2014b).

A few foreign companies *have* gained access to land to develop new plantations, through taking over existing state-owned plantations and planting (or planning to plant) the open land that is part of these areas. Green Resources manages three plantations in the Southern Highlands, which consist of about 13,000 hectares of plantation on 74,000 hectares of land. They thus have potential to increase the size of their plantations, although not all of the land is actually available for that purpose. Green Resources has set up a nursery in Tanzania with the purpose of supplying trees to its own plantations. Forestry Trust is also in the process of setting up a nursery, to assist small-scale growers in improving the quality of their trees.

Table 9 sets out the details of private plantations in Tanzania.

Table 9: Private Industrial Forest Plantations in Tanzania

Company	Planted Area (ha)	Available land (ha)
TANWAT	14,500	Unknown
Green Resources	12,000	70,000
Kilombero Valley Teak	8,148	28,132
Mufindi Paper	3,600	40,000
The New Forests Company	1,400	4,000
TOTAL	39,648	UNKNOWN

Source: FLEGT, 2014b

There is only one FSC certified forest in Tanzania – a commercial plantation of 30,000 hectares (FLEGT, 2014b). However, most of the new plantations investors have clear plans to have certified forests.

In July 2016, the Tanzanian government announced a partial suspension of harvesting of timber in eight plantations managed by the Tanzania Forest Service Agency, for the purposes of “making an evaluation on procedures, regulations and the proper criteria needed in distributing raw materials from the forests”.

Trade in forestry products

It should be noted that there are question marks around the accuracy of Tanzania's trade data for timber and timber products. What is presented in this report is a synthesis of available data with recent research. Most of Tanzania's forestry exports are in the form of unprocessed or basic (primary) processed timber. Despite the fact that log exports are supposed to be illegal, trade is clearly still ongoing. In total, Kenya is the single biggest market for timber exports from Tanzania. The biggest export markets for *sawn* timber are China, India (a big market for teak wood) and neighbouring Kenya. There are smaller markets in Europe and the United States for charcoal. Timber exports are around 250,000m³ per annum (FLEGT, 2014b).

Table 10 sets out the main destinations for Tanzanian exports for the latest available period.

Table 10: Relative share of the value for forestry product exports by main destination (2010/11)

Country of destination	% of value of exports
India	48.8
Kenya	22.0
China	8.3
Norway	4.2
United States of America	2.1
Singapore	1.4
South Africa	1.0

Source: GAI, 2014

The rising demand for timber from Kenya is being driven by a declining supply of timber in that country, driven by unsustainable levels of timber harvesting. In December 2014, the Kenyan government announced a ban on the harvesting of wood from natural forests and a partial ban on harvesting from plantation forests in that country. In 2015, the government announced that the ban was being lifted, but that only certain companies ("with a capacity to invest") would have access to timber. There is also reportedly strong demand for timber from Uganda, once again due to declining domestic supplies and rising domestic demand.

Tanzania has a large trade deficit in manufactured wood products, despite having access to large amounts of timber and very low wage costs. The biggest contributor to this deficit is wooden furniture (imports of around US\$20 million in 2015 – the bulk of it from China). Many furniture manufacturers import treated timber, given the very limited supplies of such timber in Tanzania. Other important wood imports are sawn wood from Malawi and Mozambique, wood panel products from China and paper, much of it from South Africa (FLEGT, 2014b). Our interviews suggested that South African timber has a big advantage in terms of quality and cost over many locally produced products, even when the costs of transportation to Tanzania are taken into account.

The main export port is Dar es Salaam, which is reportedly not very efficient, and long delays in the port increase the costs of both exports and imports. Trade logistics in general in Tanzania seem to be inefficient and expensive.

Tanzania is a member of both the East African Community (EAC) and SADC, which has led to some tensions, particularly since Tanzania has withdrawn from Common Market for Eastern and Southern Africa (COMESA). There is reportedly pressure from the EAC for Tanzania to leave SADC and rejoin COMESA (UNEP, 2015).

2.3.3. Regulatory/Institutional Environment

All land in Tanzania is owned by the state, and the process for foreign investors to acquire land has been both restrictive and difficult in the past. This is the main reason why most foreign investment to date has been in processing rather than in new plantation development (such as Green Resources acquisition of Sao Hill and the purchase of Mufindi Paper by a Kenyan group). The government is, however, gradually moving to a property regime that will support private property rights and individual control of forestry resources. Although private ownership of land in rural areas is legally possible, the vast majority of this land is under communal ownership, and thus not “available”. The way in which foreign investors can gain access to land is through being granted occupancy rights, mostly by central government, but occasionally by village councils.

Tanzania’s 1999 Land Act defines three categories of land:

- Reserved land: protected by statute or designated for a particular purpose such as water catchment.
- Village land: Land demarcated for the use of a particular village and under control of the relevant village council.
- General land: all other land.

There are reportedly some contentions around where the line between “village” and “general” land are drawn, particularly in areas with high-value land (such as the Southern Highlands). Rights of occupancy to general land are allocated by central government, while those to village land are allocated by the village council. The allocator of the rights is the entity that receives any royalties.

As a general rule, investors looking for land for plantations will apply for a “granted right of occupancy” (as opposed to a customary right of occupancy), usually on general land. These grants are available for a period of up to 99 years.

Prior to the policy changes of the 1990s, government owned much of the plantation and processing resources, through the Tanzania Wood Industry Corporation. Many of these have subsequently been privatized, including plantations, the processing facilities at Sao Hill and Mufindi Paper.

Despite the high level of forest resources in Tanzania, wood products have not been identified as a priority sector in the country’s long-term integrated development plan, the Integrated Industrial Development Strategy 2025 (United Republic of Tanzania, 2011). This may now be changing, particularly due to the efforts of the FDT. Until 2011, forest administration fell under the Ministry of Natural Resources and Tourism, through the Ministry’s Forest and Beekeeping Division. In 2011 the Tanzania Forest Service was established. Its mandate is to manage central government forest reserves as well as forests located on general land (FLEGT, 2014). The main legislation in respect of forests is the 2002 Forest Act and its 2004 Regulations.

The revised National Forestry Policy of 1998 recognised the need for partnerships with a range of stakeholders (including the private sector and foreign investors) to develop the forestry sector, but progress has been slow. The FDT was established in 2013 to co-ordinate and drive a long-term programme to develop the Tanzanian forestry sector. It was established by the Gatsby Foundation and UK Aid, and is funded for five years (i.e. to 2018). FDT describes its role as:

... to facilitate co-ordinated interventions among Tanzanian forestry actors that will in turn:

- Increase the supply of higher-value wood products and energy from sustainable sources;
- Increase smallholder planting and employment in sustainable private forestry;
- Raise net incomes for the sector's smallholders; and
- Ensure quality services and industry functions are provided sustainably.

The main programmes of the FDT are:

- Improving genetic resources (tree planting material).
- Increasing skills and knowledge in the sector.
- Building forestry research and data.

FDT operates nationally, but has a strong focus on the Southern Highlands, which is the centre of forestry activity, and home to relatively large numbers of small timber growers.

2.3.4. Key Sector Opportunities

Tanzania is eligible for preferential trade with the United States and the EU under AGOA and EBA, respectively. This means that significant export markets will be available if the country can improve the quality and quantity of outputs produced by the forestry sector.

There appears to be a general shortage of timber in East Africa, most notably in Kenya and in Uganda. This is increasing demand, and creates good opportunities for Tanzanian timber processors.

Over the past five years there have been significant natural gas finds in Tanzania. Over the medium term that should result in both an increase in the supply, and a decrease in the cost, of electricity, which will support industrial expansion including in wood processing.

2.3.5. Key Sector Constraints

The main constraints faced by the forestry sector in Tanzania include:

- The relatively complex land tenure system, which makes it difficult for foreign investors to acquire the large contiguous blocks of land that they require.
- Plantation management and silviculture skills are in very short supply. Many of the newer plantations are reportedly employing South Africans, who are generally regarded as having excellent skills. The main reason for this is that silviculture students in South Africa get the opportunity to gain experience on well-managed plantations, whereas their Tanzanian counterparts do not.
- Poor infrastructure – particularly roads and electricity – limits the potential for development of the sector.
- Very old equipment in most primary processing facilities which has resulted in very low timber recovery rates and generally low levels of product quality.
- Low levels of processing capacity and limited access to finance to address this.
- Poor management and operational skills in the furniture sector.
- Expensive and inefficient trade logistics: These last four factors mean that Tanzania is not benefitting from its timber resources to the extent that it should be.
- Very low collection rates of royalties from forest use is limiting government's ability to support the sector.

3. VALUE CHAINS

In this section we have documented and described the value chains operating in each country, for each of the three focus areas – forestry to timber, forestry to pulp and paper, and forestry to furniture. The best and most up-to-date data is available for South Africa (largely via the statutory data collection process and the efforts of forestry South Africa, and reflecting the mostly formal nature of the sector). Things are very different in Mozambique and Tanzania, where there is very little in the way of formal data collection, submission or verification, and large parts of the forestry and timber sectors are both informal and operate without any oversight or control from government. This is particularly the case in Mozambique, where high levels of corruption in the production and export of timber have created an environment where there is a strong incentive either not to publish data, or to publish inaccurate data. Things are a little better in Tanzania, thanks to the efforts of the Forestry Development Trust in that country, but the practicalities of collecting data from the mostly informal sector in that country also presents challenges.

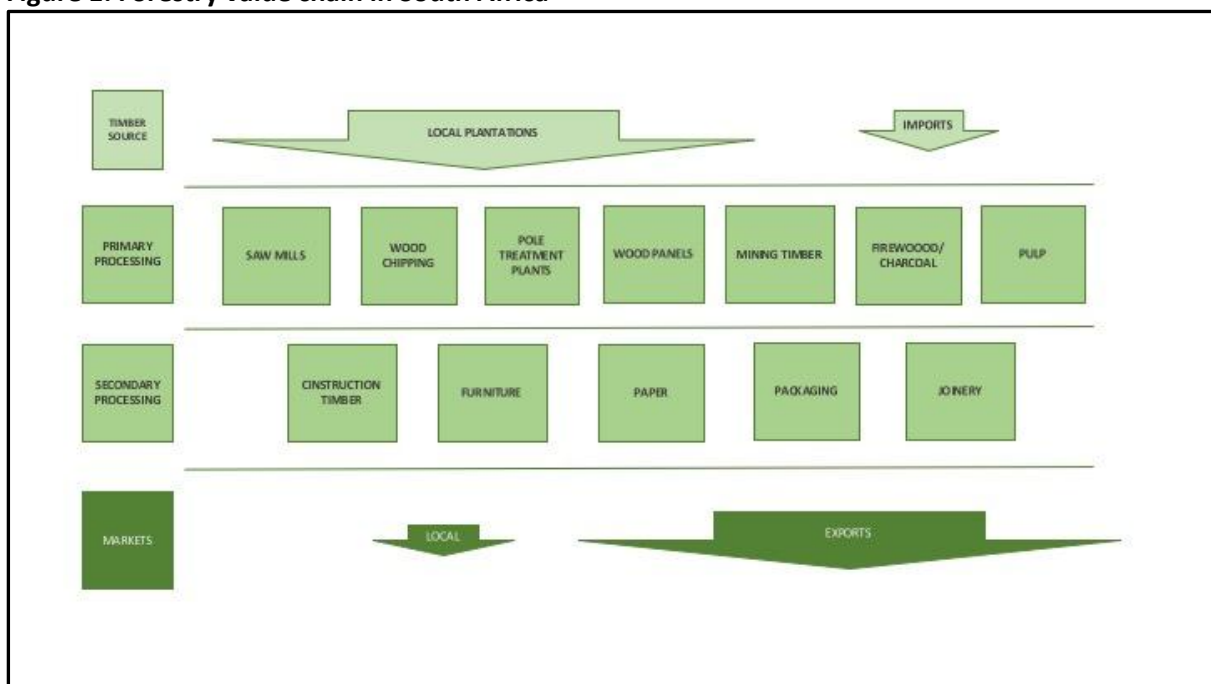
To address these issues we have consulted numerous data sources, including official national and international statistics, donor and other multilateral agency research reports, corporate reports, and news reports. Where possible, we have supplemented these with interviews with people active in those sectors.

3.1. South Africa

South Africa has by far the most developed forestry value chains of the three countries, and is a world leader in one of them – pulp and paper. There are well-developed primary and secondary processing sectors, with significant exports from both.

The forestry sector value chain is summarised in Figure 1.

Figure 1: Forestry value chain in South Africa



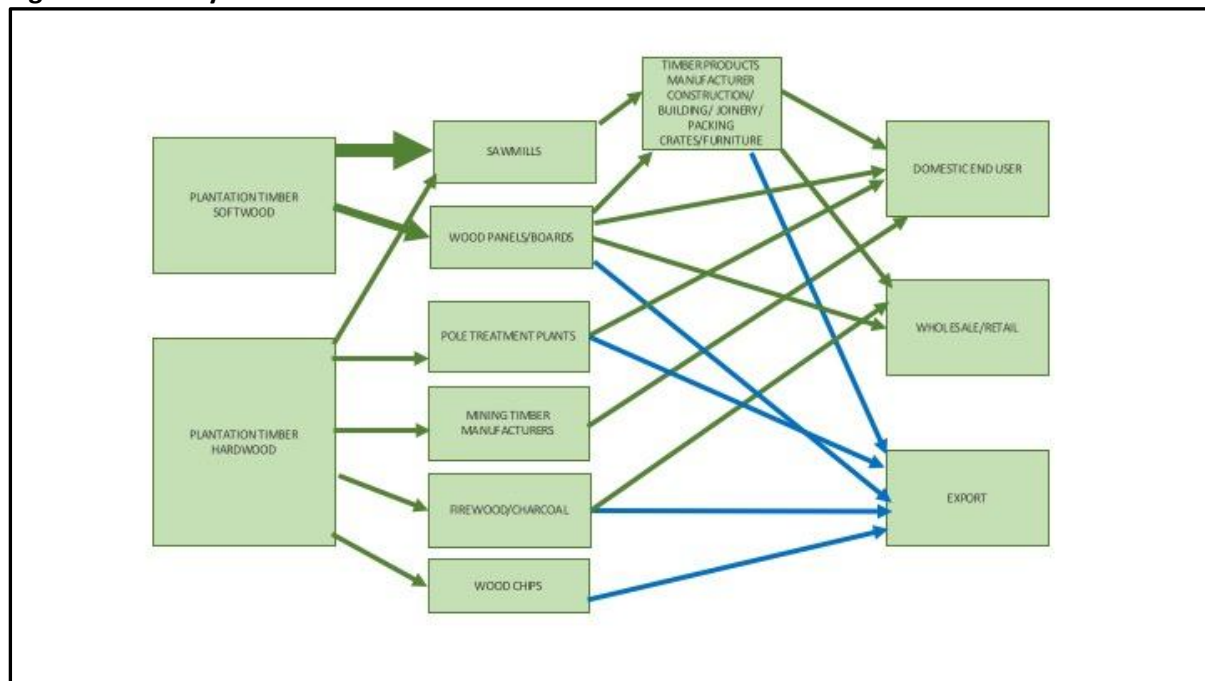
Source: Compiled by author

3.1.1. Forestry to Timber

The forestry to timber value chain incorporates roundwood (industrial roundwood which can be categorised as sawlogs, veneer logs, pulpwood and/or fuelwood), sawn wood, wood panels and wood chips.

The forestry to timber value chain for South Africa is set out in Figure 2.

Figure 2: Forestry to Timber Value Chain



Source: Compiled by author

What is the relative importance of each of the main timber products in the value chain, and how has this changed over time? The main categories of roundwood sales from plantations by category is shown in Table 11, as well as the trends in output.

Table 11: Roundwood sales from plantations by category and volume (2013)

Product	Volume ('000m3) – 2013			% change in volume 1980 – 2013	% change in volume 2005 – 2013
	Softwood	Hardwood	Total		
Sawlogs and Veneer Logs	4,367	93	4,460	+14.6%	-22.8
Pulpwood	2,793	9,229	12,022	+194.4%	-20.4
Mining Timber	0	638	638	-79%	-30.8
Poles	56	306	362	+8.8%	-24.5
Charcoal and firewood	N/C	N/C	251	-54%	-15.0
Other	48	317	365	+86%	-39.6
TOTAL	7,264	10,583	17,847	+52%	-21.8%

Source: Forestry South Africa, 2015

The two most important categories of roundwood are sawlogs/veneer logs and pulpwood, which

together make up more than 92% of all roundwood production. Both categories have grown over the past 30 years, but it is important to consider what has been happening since 2005: in 2005/06 the output of roundwood peaked at just under 23 million m³. Since then (i.e. up to 2013) it has declined each year, and in 2013 was 21.8% lower than in 2005. This is the direct result of the failure to develop new plantations. This downward trend is likely to continue until new plantation activity comes on stream. Table 11 also indicates that pulpwood has been the least affected by the downturn in output, reflecting the fact that the limited amount of afforestation that has taken place has been largely for pulpwood.

Table 12 indicates the volume and value of timber products by main category, also indicating the changes since the market peak in 2006. (The volume of sales from primary processors peaked in 2006, reflecting the lag between lower timber production and lower processing output. Using 2006 as the base year for comparison for primary processing gives a better indication of the extent to which declining wood supply has affected primary processors).

Table 12: Volume and value of main roundwood products ex primary processors by volume and value

Product	Volume ('000m ³ /tons): 2013			Value	
	Unit	Volume	% change from 2006	R millions (nominal)	% real change from 2006
Sawn Timber	m ³	1,588	-16%	4,615.2	-2.8%
Pulp	Tons	2,233	-0.3%	11,170.4	-23%
Wood based panel products	m ³	1,154	+40.7%	1,955.8	-44.2%
Mining Timber	Tons	386	-17.6%	351.8	+3.6%
Poles	m ³	418	+51.6%	545.9	-23.4%
Charcoal	Tons	58	+391%	67.2	+36.3%
Chips/Mill residues	Tons	2,299	-53%	1,472.7	-47.5%
Firewood	Tons	50	+99%	N/A	N/A
TOTAL				20,313.3	-25.4%

Source: Forestry South Africa, 2015

The main factors contributing to the reduction in the real value of output were the general economic slowdown, and the period of relative stability of the Rand, which reduced the value of exported products in real terms.

Sawn Timber is comprised almost entirely of long-growth softwood, with a relatively small amount of long-rotation (i.e. more than 20 years) hardwood (eucalyptus). This is because sawmills require logs of relatively large diameter to be profitable. The result is that the sawn timber market is reliant on **long-rotation** plantations, and thus will experience the longest lead times in the timber sector to benefit from new afforestation. It also means that integrated sawmillers (i.e. those who produce their own timber) need to be in a position to make long-term capital investments, despite current poor market conditions for final products.

The area of plantation for the purposes of sawlogs peaked at 606,000 hectares in 1996, and is currently at around 470,000 hectares. Over that period, softwood plantations for sawlogs have

declined from 560,000 hectares to 453,000 hectares. The implication is that even if domestic demand for sawn wood products increases, there is limited availability of raw material. This shortage will affect smaller mills to a far greater extent than larger mills, since the latter often have tied plantations. The profitability of the local sawmilling sector has plummeted in recent years – from around R282/m³ in 2007 (Sawmilling SA, 2014) to less than R100/m³ at present.

Sawn timber is divided into saw logs and veneer logs. Veneer logs are typically the highest quality logs, with very few or no wood/bark defects and must be straight and well-formed (uniform colour and uniform texture). The term “veneer” refers to very thin (less than 3mm) slices of wood that are glued onto panels (either wood or board). The end products of veneer include cabinetry, furniture and flooring. Veneer quality logs may also be used for high-value solid wood items, such as furniture. Veneer logs are high value, but make up a relatively small part of total sawn timber.

There is a relatively small amount of imported sawn timber into South Africa (around 160,000m³ - which is around 9% of the total annual sawn timber production), most of which is for the furniture sector. This includes tropical hardwoods (meranti is the biggest single imported species) and exotics such as oak, which is popular for furniture. The vast majority of this wood is from certified forests, which is what is demanded by customers. Some of this is imported by the larger sawmillers (such as Hans Merensky), and some by specialist timber merchants which supply the furniture sector. Exports of sawn timber are even lower, equivalent to less than 3% of sawn wood production. This reflects the relatively low value of the main products of sawmilling (construction timber) relative to transport costs.

Sawlogs are classified into various categories (with different values) based on the length of log and diameter. Most sawlogs are classified using the original Department of Forestry tables:

Log Class	Log Length	Thin-end diameter
A	1.8 – 3.3m	130 – 179mm
B1	1.8 – 3.3m	180 – 259mm
B2	3.6m +	180 – 259mm
C1	1.8 – 3.3m	260 – 339mm
C2	3.6m +	260 – 339mm
D1	1.8 – 3.3m	340mm +
D2	3.6m +	340mm +

The ability to produce a high-quality and value log is the outcome of silviculture practices, and as discussed above, South Africa has a competitive advantage in the production of high-quality timber.

The sawmilling sector has been under pressure for a number of years, and many of the smaller operators have gone out of business. Interviews suggested that five of them had gone out of business in the past 20 years in the Tzaneen area alone. There are currently around 72 sawmills and veneer mills in South Africa, compared to 35 years ago when there were more than 150, according to data collected by Forestry South Africa. There has been a significant attrition of saw mills since the start of the global economic slowdown in 2009 with more than 30 of those mills closing down between then and 2013. In addition to the mills listed by Forestry South Africa, there may be as many as 100 or so additional small-scale and/or informal sawmillers in operation (IDC, 2014).

The sawmilling sector is characterised by a relatively large number of operators, with no one company enjoying a dominant position. It is also characterised by a fairly high number of private (i.e. unlisted) companies. The two largest sawmillers – York Timbers and Hans Merensky – produce about 25% of the market output. Merensky produces most of the sawn eucalyptus in South Africa. Most of the large mills are located in Mpumalanga (more than 50% of total sawn timber in South Africa is produced in this province), while most of the smaller mills are located in the Eastern Cape. Previously, many sawmillers enjoyed long-term supply contracts with SAFCOL, which supplied them at favourable prices and ever green contracts. As SAFCOL has withdrawn from the market and terminated these unviable arrangements, so those sawmillers that own their own plantations and thus process mostly their own wood, have increased their advantage over smaller sawmillers, since raw timber is by far the biggest component of saw mill costs (IDC, 2014). Sawmilling has a strong regional bias, reflecting the location of softwood plantations. Sawmillers benefit from their relative proximity to Gauteng, which is the single largest market for sawn timber in South Africa.

The value of sawn timber increases if it is properly dried: drying the wood produces a higher quality product since it is not susceptible to warping. Wood drying facilities are expensive to establish, and are thus found only at the largest sawmillers. This enables them to obtain a generally higher price for their product than smaller sawmillers, which must usually sell their product into the less valuable markets. Some studies have suggested that the selling price difference between the biggest and the smallest sawmills may be as much as 30%.

Sawn wood is the input into a number of downstream processing activities – higher quality wood goes into construction and housing, joinery and furniture, while lower quality wood goes into a number of industrial applications, such as crates. The bulk of softwood (pine) is used as structural wood in the construction sector. Most of the eucalyptus goes into higher-value furniture and joinery. The building sector is thus the biggest market for sawn wood, absorbing around 75% of production. This encompasses construction timber (such as roof trusses, which are the single biggest item produced), wooden doors and windows, garage doors and wooden floors. As a result, the sawn timber market (particularly softwood) is highly dependent on the state of the domestic housing market, which has been under pressure for several years. Softwood processors are also vulnerable to the use of new technology that replaces traditional softwood in construction and housing applications. This includes new technology that uses “wet” (short-rotation) eucalyptus to produce roof trusses, as well as the use of composite materials in items such as garage doors and doors and windows.

In addition to sawn timber (lumber), the sawmilling sector produces sawdust, bark and woodchips.

The outstanding feature of the local sawmilling sector is the generally very old (40 years or so) technology used. This saw frame technology is inefficient, contributing to the low wood recovery rates – currently below 40%, and significantly lower at many smaller sawmillers. Sawmillers are in a very difficult position – they need better technology to increase efficiencies and profits, but poor market conditions mean that they cannot afford significant capital investment. Since most of the sawmillers are *private* companies, their ability to raise capital is limited.

Sawmilling is highly labour intensive, and an important source of employment for semi-skilled labour in rural areas. Sawmilling currently directly employs somewhere around 20,000 people, and industry

estimates are that another 10,000 people are indirectly employed. Employment in the sector has been adversely affected by sawmill closures over the past seven years.

The profitability of the saw milling industry per m³ has declined since 2007 from R282 per cubic to current R161 per cubic meter. The current levels of South African industry processing recovery rate per log currently at 39%, which is well below the 60% global average.

Sawmilling products are either sold directly to building retailers (such as Timber City, Cashbuild) or for secondary processing into a range of construction, building and other products.

Pulp is discussed in more detail in the next section.

Mining timber has traditionally been used in underground mining operations, as support beams. Timber is demanded either for new operations (i.e. expansion of mining tunnels in existing mines or for new mines) or for replacement in existing old operations. Demand for mining timber has declined in line with the reduction in the expansion of new mining activity, as well as increased use of hydraulic support systems in very deep level mining. Mining timber is produced from hardwood – mostly eucalyptus and a limited amount of wattle. Plantation areas intended for mining timber have declined steadily, from a peak of 286,000 hectares in 1990, to just 53,500 in 2013. The steady decline can be expected to continue, and the share of mining timber to the overall sector will fall further. Mining timber production employs around 2,000 people.

The term “**wood panel**” refers to a wide range of different wood-based manufactured products used for a variety of uses, but primarily in construction, packaging, furniture (flat pack furniture as well as kitchen cupboards) and coffins. These products can be classified into sub-products such as plywood, composite boards, insulation board, plywood, particle board and medium density fibreboard (MDF). Particle board (or “chipboard”) is an important part of the local wood panels market. Particle board is manufactured by mixing dried wood particles (milled or chipped) with a resin, and then producing sheets of various thicknesses. Applications include kitchen and cupboard construction, wooden pallets. The global market for wood panels fell sharply after 2008: many European producers are operating at around 75% capacity and have seen significant (around 45%) declines in profits. Mostly softwood is used, although hardwood may also be used.

The wood panel manufacturing sector is highly concentrated. The biggest wood panel manufacturer in South Africa is PG Bison: the company is estimated to have just under 50% of the local particle board market and almost 60% of the local MDF market. Its new R1.3 billion board plant in Ugie in the Eastern Cape (with a capacity of 1,000m³) was opened in 2008, unfortunately coinciding with the global economic slowdown. However, the company appears optimistic about long-term prospects. In 2012 it opened a new MDF plant in Gauteng, and in October 2015 announced infrastructure investment of around R1 billion in upgrading its particleboard manufacturing facilities in Piet Retief, which will take the company’s total chipboard capacity to 2,000m³ a day. PG Bison exports into other African countries, including Tanzania, and has some interest in expanding its value chain into East Africa.

PG Bison has access to its own plantations – a total of 41,200 hectares (softwood primarily), which is a key factor in its market power. Plantations were acquired in the merger between Steinhoff and PG Bison, although the latter is now a wholly owned subsidiary of KAP (listed on the JSE), which

purchased it from Steinhoff in 2012. PG Bison historically had strong vertical linkages into the retail sector via its shareholdings in Timber City and Pennypinchers, but these remained with Steinhoff after the sale to KAP.

Masonite Africa was formerly one of the larger producers of wood panel products – specialising in hardboard and insulation board. In early 2016, however, the company entered into business rescue.

South Africa imports around \$8.5 million (about R127 million) of particle board each year (as at 2014), and the recent depreciation of the Rand offers the prospect of import substitution.

Woodchips are a significant part of the forestry to timber sector, most particularly because of their export earnings. The bulk of these exports go to Japan, with an annual value of around US\$140 million (just over R2 billion). Wood chipping is the first stage in the production of pulp, and thus traditionally has been an integrated part of the pulp value chain, and the pulp producers own and operate both hardwood and softwood chipping plants. However, over the past 20 years there has been a strong increase in the production of hardwood wood chips as an end product, almost all of which are exported.

The most significant participant in this market is NCT Forestry Co-operative in KwaZulu-Natal. NCT is a marketing cooperative established in 1949. It has more than 2,000 shareholding members and represents timber growers holding about 300,000 hectares of plantations. Most of these are hardwood plantations (largely eucalyptus and some wattle), producing pulpwood. Its mandate is to source, develop and maintain markets for its members. The main reason for the move into the woodchip export market (which currently makes up the majority of their sales) was to get a better price for its members than local pulp manufacturers (i.e. companies like Sappi and Mondi) were prepared to pay. These latter enjoyed significant market power as the owners of the pulp mills, and thus the only significant market access point for pulpwood producers. As a result of NCT opening up an alternative market for these growers, the local price for this wood has increased, and the price for woodchips now determines the price that the bigger companies must pay their suppliers.

NCT owns four wood chipping facilities – three are located in Richards Bay and one in Durban. Proximity to these ports is a key part of the woodchip value chain. The first mill was established in 1970, but the market only expanded significantly in the 1990s when South Africa was welcomed back into world trade. All of these mills export their product to Japan, where it is used to produce pulp for paper production. The vast majority of the exported wood chips (around 90%) are from *Acacia Mearnsii* (Black Wattle). This is the preferred species of wood preferred by their customers, given its low moisture, high density and high pulp yield.

Wood chip mills are much cheaper to establish than pulp mills (less than 5% of the cost), and also offer opportunities for timber producers that may not be producing timber of sufficient quality for sawmilling. It is also an important market for short-rotation hardwood, and thus for smaller-scale growers. Wood chipping employs a very limited number of people – around 500 in total. However, their employment impact should be considered against the fact that they offer an attractive market access point for smaller timber producers, thus contributing to their viability.

In discussions with a large pulp producer, the company indicated that it is quite resentful of the wood chip export market, as it believes that this is diverting much-needed raw materials from the

dissolving pulp sector, which represents a beneficiation of timber. It estimates that the two million tons of woodchip export could be used to produce 500,000 tons of dissolving pulp, which would increase pulp exports significantly, and facilitate the expansion of dissolving pulp mills. However, the fact remains that the wood chip market is an attractive option for smaller timber producers, and its existence has most likely resulted in higher prices for these producers. Above all, the debate between wood chip producers and dissolving pulp manufacturers highlights the value of black wattle for growers and manufacturers, and suggests that the debate around its wider cultivation needs to be reinvestigated.

In addition to receiving a higher price for their timber, the members of NCT share in the profits of the chipping plants owned by the cooperative.

Wooden poles are one of the less well-known forestry products (making up only 2% of the output of primary processing facilities), but are relatively high value. Wooden poles are produced in a variety of dimensions for a variety of uses, including transmission, telephone and electricity poles, fence poles and poles for building foundations. There is real skill involved in growing trees that are suitable for use as telephone and transmission poles, and discussions with industry participants suggest that South Africa has a clear competitive advantage in producing these products, which are exported to several African countries. The increase in electrification and the extension of fixed telephone lines in countries like Tanzania and Kenya has created good demand for South African poles. The main competition to these products is poles made of concrete or (to a lesser extent given their secondary market value) steel. The vast majority of poles are produced from hardwood, particularly eucalyptus. In the domestic market, poles are sold either directly to end users, or through a range of wholesalers and retailers, such as agricultural cooperatives and Timber City.

Spilt poles and other categories of poles do not make the same silviculture demands on growers, and so are generally more suitable markets for smaller growers.

Plantations reported to be managed for the purpose of poles occupy about 25,200 hectares (Forestry SA, 2015), well down on the peak of over 80,000 hectares recorded as being planted for poles in 1996. Since then, the amount of plantation designated as being managed for the purposes of producing poles has been more volatile than would be expected, given the rotation periods of these plantations. It is likely that the “decline” in plantations for this purpose reflects – at least in part – the move of plantation owners to manage for other purposes (wood chipping is a very strong candidate).

In contrast, Table 13, which shows the intake of roundwood at pole treating plants, suggests that the volume of wood going into these plants is increasing. The discrepancy between the two sets of data most likely suggest that pole treating plants are making greater use of timber from smaller plantations and growers that may not be included in the FSA plantation survey.

Table 13: Intake of roundwood by pole treating plants (m³)

Year	2000	2005	2010	2013
Volume (m3)	254,392	272,633	397,182	417,580

Source: Forestry South Africa, 2015

Exports of poles from South Africa in 2014 were around 35,900 m³ (DAFF, 2015 and our own calculation using standard industry conversion rates), or just over 8% of national pole production.

Almost all of this went to African countries, and the bulk of that to SADC countries. Namibia is by far the biggest market for South African pole exporters, followed by Mozambique, Mauritius and Botswana. Of these, Mauritius is the fastest growing.

3.1.2. Wood to Pulp and Paper

Pulp is the biggest part of the local forestry sector, by a considerable margin. It represents the biggest share of plantations, is the highest value of exports, and is headed by two very significant companies – Sappi and Mondi – both world players in their sector. Pulpwood currently makes up around 56% of all plantations (an increasing percentage of which is hardwood), and much of the additional afforestation planned for in the Eastern Cape and KwaZulu Natal will be pulpwood, mostly hardwood. In 2014 Sappi announced that it was planning to sell 30,000 hectares of softwood (pine) forests in Mpumalanga, to focus on hardwood production.

Table 14 sets out some key statistics indicating the value of the pulp and paper sector over the past three years.

Table 14: Key indicators for pulp and paper sector 2013-2015

Indicator	2013	2014	2015
Forestry – paper contribution to GDP (%)	0.6%	0.5%	0.5%
Forestry – paper contribution to manufacturing GDP (%)	3.8%	3.7%	4.2%
Balance of trade: all papers and pulps (R billions)	+R2.156	+R3.693	+R5.000
Balance of trade: pulp (R billions)	+R6.384	+R7.169	+R8.900
Balance of trade: paper and board (R billions)	-R4.228	-R3.476	-R3.940

Source: PAMSA, 2016

Table 15 sets out the data for production, trade and domestic consumption of pulp and paper, from 2008 to 2015.

Table 15: Production, Trade and Domestic Consumption of pulp and paper 2008 – 2015 ('000 tons)

	2008	2009	2010	2011	2012	2013	2014	2015
Production								
Total Paper	2,726	2,244	2,497	2,261	2,427	2,313	2,261	2,289
Total Pulp	2,572	2,130	2,307	2,321	2,259	1,985	1,967	1,982
Imports								
Total Paper	645	706	708	738	805	825	762	791
Total Pulp	114	99	77	79	88	144	230	214
Exports								
Total Paper	1,084	794	735	547	565	611	733	666
Total Pulp	849	1,008	985	1,113	998	1,047	1,165	1,128
Consumption								
Total Paper	2,286	2,156	2,469	2,453	2,669	2,526	2,290	2,415
Total Pulp	1,991	1,336	1,589	1,227	1,519	1,409	1,327	1,375

Source: PAMSA, 2016 and own calculations

Both total paper and pulp production have fallen over the period from 2008 to 2015; paper by 437,000 tons (16%) and pulp by 590,000 tons (23%). However, exports of pulp rose significantly over the same period – 279,000 tons, or 33%. In 2008, exports of pulp accounted for 33% of total

production. By 2015 that percentage had increased to 57%. This reflects the strong increase in global demand for pulp. It is interesting to note that while domestic consumption of paper products has remained more or less stable, domestic consumption of pulp is declining, and paper exports have declined significantly. This reflects the declining output of the domestic paper sector. The biggest decline in both domestic production and exports has been in printing and writing papers; the share of that category of total paper production has fallen from just under 40% to just under 30%. Production of packaging paper has remained more or less stable (at 61% of total production). The decline in domestic production of pulp together with a greater share of that production being allocated to exports is the most likely the main reason for the increase in imports of pulp (100,000 tons – 88%) and paper (146,000 tons – 23%). Most of the imported pulp would be for the production of paper (i.e. not dissolving cellulose pulp), since South Africa does not have a downstream processing sector for dissolving cellulose pulp – as discussed below).

Pulp is the most important part of the pulp and paper market. It is divided into two main categories – pulp used for the manufacture of paper and dissolving (cellulose) wood pulp. The former is manufactured mainly from softwoods (although some hardwood is also used for speciality papers), whereas dissolving wood pulp (DWP) is produced only from hardwood in South Africa – wattle and eucalyptus. The manufacturing processes are different, and the manufacture of DWP (particularly the higher grades) requires a significantly higher capital outlay. **About 70% of the global production of DWP is used to make viscose staple fibre (rayon)**, the bulk of which is manufactured in China. China is thus the world's largest market for DWP, and the demand is slowly growing, as global demand for the end product (textiles) is recovering. Other industrial applications of DWP include the cellulose source in the manufacture of plastics, explosives and laquers.

Most of the growth in pulpwood plantations over the past 30 years has been in hardwood: in 1979 hardwood made up just under 61% of pulpwood plantations, and now it is almost 75%. This represents the fact that the market for dissolving pulp is growing at a faster rate than that for softwood pulp.

Sappi and Mondi are South Africa's two largest pulp producers, and both produce pulp for the paper sector, but only Sappi produces DWP. It is a world leader in this field: the company operates two DWP plants in South Africa – Saaicor in KwaZulu-Natal has a capacity of 800,000 tons and is the world's largest single plant manufacturing DWP. Ngodwana in Mpumalanga has a capacity of 210,000 tons per annum. In addition, Sappi owns Cloquet Mill in North America, which has a capacity of 330,000 tons per annum. Sappi's production capacity is around 18% of global demand, making it a leading global player. The company derives much of its competitive advantage from being vertically integrated with its timber supply. Almost all the DWP produced by Sappi is exported, since there is practically no local manufacturing capacity based on the beneficiation of DWP.

Data (IDC, 2014; Sappi, 2015; PAMSA, 2016) suggest that DWP exports are around 800,000 – 850,000 tons per annum, which in turn suggests that there is probably around 15%-20% spare capacity in DWP manufacturing in South Africa. This, in turn, implies that an additional 800,000 to one million tons of hardwood could be absorbed by existing capacity. In addition, discussions with Sappi suggested that at least one of the existing pulp mills could be expanded, which suggests that the latent demand for hardwood for DWP is even higher.

Pulp mills need to be located in fairly close proximity to both the source of timber and market logistics points. As most of the pulp in South Africa is exported, this implies that pulp mills be located near a large port, and thus most are located in proximity either to Durban or Richards Bay. There is thus an important spatial and infrastructure constraint to where feasible pulp mills can be located.

Despite the dominance of big companies in the pulp sector, there is clear evidence that small timber producers can be included in the value chain. In particular, the growing demand for DWP – together with existing excess capacity – suggests good opportunities for smaller growers. Sappi’s outgrower scheme is focused on hardwood production (it is difficult to build small outgrower schemes around the longer rotation as they have to wait so long before it can be marketed) and it has been a considerable success. Sappi is including a significant outgrower component in its Eastern Cape expansion. It must be noted, however, that Sappi’s programme has expanded without any meaningful support from government. In an interview, Sappi mentioned specifically that there are no government agricultural or micro-enterprise funding schemes that can be accessed by small timber growers, because of the long period (about eight years) that must pass before any income can be earned from the crop. These small growers need access to funding that will allow them to draw down the costs of their plantation, and repay these funds when they sell the timber. Sappi provides this facility on an interest-free basis, which is another important factor contributing to the profitability of the small growers.

Paper is a much less important component of the pulp and paper market in South Africa. The main categories of paper products are:

- Printing and writing papers (uncoated paper, coated paper, newsprint and telephone directory paper, SC (super calendered) mechanical and LWC (light weight coated) paper).
- Packaging papers (liner board, fluting, other Kraft paperboard and fibreboard).
- Tissue paper

Table 16 sets out the details of the volumes of domestic production, consumption and trade in the main paper products, for 2015.

Table 16: paper production, trade and domestic consumption (2015, tons)

Item	Production	Imports	Exports	Consumption
Newsprint	217,860	24,003	38,130	203,733
Printing/writing paper	462,709	526,437	140,968	848,178
Corrugated materials	1,252,986	152,210	363,504	1,041,692
Other wrapping papers	6,605	0	0	6,605
Tissue	213,704	37,808	31,786	219,726
Other paper	102,388	51,143	91,365	62,166
Board	32,856	0	0	32,856
TOTAL	2,289,109	791,601	665,753	2,414,957

Source: PAMSA, 2016

Exports of newsprint and tissue paper are primarily to other SADC countries. South Africa imports both coated and uncoated paper, but imports of the former are almost 10 times the value of the latter. There is very little coated paper produced in South Africa.

3.1.3. Wood to Furniture

Wooden furniture is a relatively small part of the forestry value chain in comparison to parts such as pulp. However, it has potential to contribute to economic growth and job creation given its labour-intensive nature, the relatively high number of SMMEs in the sector, and the opportunities presented by economic growth in neighbouring countries: demand for furniture is highly correlated with rising domestic growth and consumer incomes in SADC countries such as Tanzania and Mozambique.

Obtaining accurate data for the wooden furniture sector presents some challenges, since national data is not disaggregated on the basis of the material used in the manufacture of furniture. In addition, many furniture items contain a combination of materials – wood, steel and fabrics – and it is thus not easy to differentiate

The EU accounts for about half of world furniture imports. This is a notable point for our regional analysis, since there is recent regulation in the EU around the provenance of wood and timber products imported into the EU as well as consumer preferences that are important for developing the regional value chain around wooden furniture. The most important of these is Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 which became effective in March 2013. It sets down obligations on EU companies (in all 28 EU member countries) which sell either timber or timber products into the EU. Essentially, it prohibits the sale of either illegally harvested timber or products made from illegally harvested timber. It requires that companies undertake due diligence to determine the provenance of both timber and timber products. Implementation of this regulation is still in its early stages, and levels of compliance are still quite low. However, it will gain traction and become an important factor in blocking access to EU markets for certain timber and timber products. The easiest way for EU companies to exercise “due diligence” in respect of timber provenance is through a certification scheme.

The furniture manufacturing sector currently contributes around 1% to total GDP, and wooden furniture contributes between 30% and 40% of that total. The entire furniture sector has been negatively affected by the economic slowdown since 2009, since demand for furniture is highly correlated with domestic economic activity, particularly household income. Rising levels of household debt have also been a negative factor for the furniture sector.

Employment in the sector is around 25,000, in about 2,000 entities. It has declined over the past few years, as trading conditions for furniture manufacturers – particularly smaller manufacturers – have deteriorated.

The wooden furniture manufacturing sector is made up of the following main sub-sectors and products:

- Inners for mattresses.
- Frames for furniture such as upholstered couches and chairs.
- Kitchens – which can be constructed either from solid wood, or a wood panel product that is either painted or veneered with wood.
- Office furniture.

- General wooden household furniture (i.e. tables, chairs, cupboards etc.) These may be solid wood, high-end veneer products, or cheaper board-based products.

The wood furniture sector uses local sawn timber inputs as well as other materials such as leather, metal and cloth. Inputs from the timber sector are various: pine is used in the manufacture of mattress inners and furniture frames, and very high quality (i.e. long rotation) pine is also used in the manufacture of certain solid wooden furniture. The wood panel sector is a key supplier for the furniture sector, particularly the manufacture of kitchens and household cupboards, some office furniture, and the increasingly popular flat-pack furniture.

The sector also uses imported exotic woods, such as oak (the most popular in South Africa), ash and beech as well as tropical hardwoods. These woods are used to manufacture high-value solid wood or veneer furniture. This imported wood has already passed primary processing in that it has already been dried and seasoned, and is often already cut into various blocks or timber lengths. Most of the manufacturers which make use of these imported woods are relatively small companies, and cannot afford to import these woods on a cost-effective basis. They are thus dependent on timber merchants, who import and store the wood, and sell it to manufacturers as they require it. These woods are generally more expensive when purchased in this way, and their price is denominated in US dollars, which contributes further to their cost. Small high-end manufacturers interviewed for this research indicated that accessing quality wood at a reasonable price was “a constant struggle”. There are also a number of other inputs into high-end furniture manufacturing that are dollar-denominated, such as speciality coatings and varnishes. These costs imply that Rand depreciation tends to increase the domestic costs of these companies.

Most of these manufacturers are not using any wood from other African countries, save for occasional small amounts of kiasat from Mozambique. The main reason given for this is that they require wood from certified forests, and this is simply not available.

One of the biggest parts of the wooden furniture sector is sofa manufacturers, which tend to be the bigger companies. They use mostly cheaper pine as an input. Bravo Group is the biggest local furniture manufacturer, and has a very large share of the domestic mattress market. It manufactures well-known brands such as Sealy, Edblo, Slumberland, Gomma-Gomma and Grafton Everest. The group was formed in 2007, when Steinhoff sold its furniture manufacturing businesses. Bravo Group operates seven factories in South Africa, four of which produce mattresses and together employ 1,100 people. The other three factories (one in Cape Town and two in the Durban area) produce lounge furniture. These are significantly sized operations, employing 2,300 people and producing 45,000 pieces of furniture a month. These are sold primarily through large retail chains. Bravo Group is a key contributor to employment in the local furniture sector.

Most companies in furniture manufacturing, however, are small or very small businesses, employing 20 or fewer people. The majority are located in Gauteng, the Western Cape or around Durban, in order to have close proximity to their main markets. Kitchen and related cupboard manufacturers are an important part of this group. The viability of these businesses is closely correlated with local building activity and household income.

South Africa’s exports of furniture are relatively small and have declined steadily since 2010: in that year exports totaled just over US\$128 million, made up as follows:

- Bedroom furniture (mostly mattresses) – 24.5%
- General furniture – 52.6%
- Office furniture – 16.8%
- Kitchen furniture – 6.1%

In 2015, total exports of wooden furniture had fallen to just under US\$85.7 million (about R1.4 billion), made up as follows:

- Bedroom furniture – 19.5%
- General furniture – 58.3%
- Office furniture – 15.9%
- Kitchen furniture – 6.2%

The most important export markets for South African furniture are Namibia, Botswana, Zambia and Lesotho. There are, however, rapidly growing markets in West Africa – Gabon, Ghana and Nigeria, which showed strong growth (albeit off a low base) in 2014 and 2015. Interviews with industry participants suggested that at least part of this growth can be attributed to growing exports by high-end manufacturers such as Bakos Brothers and Hartmann and Kepler, as well as the fact that a South African manufacturer/retailer (House and Haven) opened two stores – one in Zambia and one in Ghana – and reportedly these are doing well, after a slow start. These interviews also suggested that furniture exports probably improved through 2016, as a result of the weaker rand and slightly higher international growth.

With the other two countries in this study – Mozambique and Tanzania – Mozambique is by far the larger importer of furniture from South Africa of the two, importing almost US\$6 million in 2015, compared to US\$1.5 million that went to Tanzania. The biggest categories for both countries are general furniture, followed by office furniture.

South Africa is a net importer of wooden furniture: in 2015 imports totaled just under US\$110 million, resulting in a negative trade balance of around US\$25 million. This is a deterioration from 2010, when the trade balance was neutral. Although imports have fallen in US dollar terms from 2010 to 2015 (as a result of the weaker rand which has made them more expensive together with declining consumer demand) they have not fallen as fast as exports. The biggest component (76%) of imports is general furniture. Bedroom furniture has seen the biggest decline in imports over the same period. About half of South Africa's imports of furniture come from China.

Much has been written about the challenges that the local industry faces. It should be noted, however, that many of the challenges facing smaller and/or specialist furniture manufacturers (most of which tend to be smaller companies) are significantly different from those facing the biggest manufacturers, such as Bravo Group. This is an important factor to keep in mind for the purposes of policy formulation.

High-end manufacturers make up a small part of the market, but (as discussed above) they appear to have good potential markets in West Africa and in the EU, particularly if the Rand continues to be competitive. However, these are the businesses that most require access to competitively priced exotic woods and support with capital investment. Capital is an important constraint for many

smaller furniture manufacturers, which find it difficult to access finance to invest in new technology. Our interviews also suggested that there was limited new or planned new investment by smaller companies in this sector, mostly due to the generally poor trading environment of the past few years.

They are also the businesses where the shortage of specialist cabinetry and carpenter skills are being felt most acutely, since this is where the greatest demand for these skills lies. Information obtained in our interviews suggested that the average age of well-skilled artisans in the industry is over 50. Companies are of the opinion that the old apprenticeship system worked very well in furniture manufacturing, and that the current learnership system is completely inadequate to produce the skills that the industry needs. It is also a very disruptive system to businesses that employ relatively few people, since they cannot afford to keep sending them away for training. It does not appear that the sector SETA is creating benefits for these smaller manufacturers.

Another challenge facing smaller manufacturers in particular is the relative power of retailers in the sector: retailers have considerable pricing power over these companies, particularly in light of growing competition from imports.

As a result, the margins of many manufacturers have come under considerable pressure. Retailer power is one of the factors behind the closure of smaller manufacturers. Some manufacturers have responded by opening their own retail stores – examples are Bakos Brothers, Block and Chisel, Hartmann and Kepler, Classic Revivals and others. These are mostly high-end manufacturers. Direct access to consumers is an important factor in the viability of smaller manufacturers.

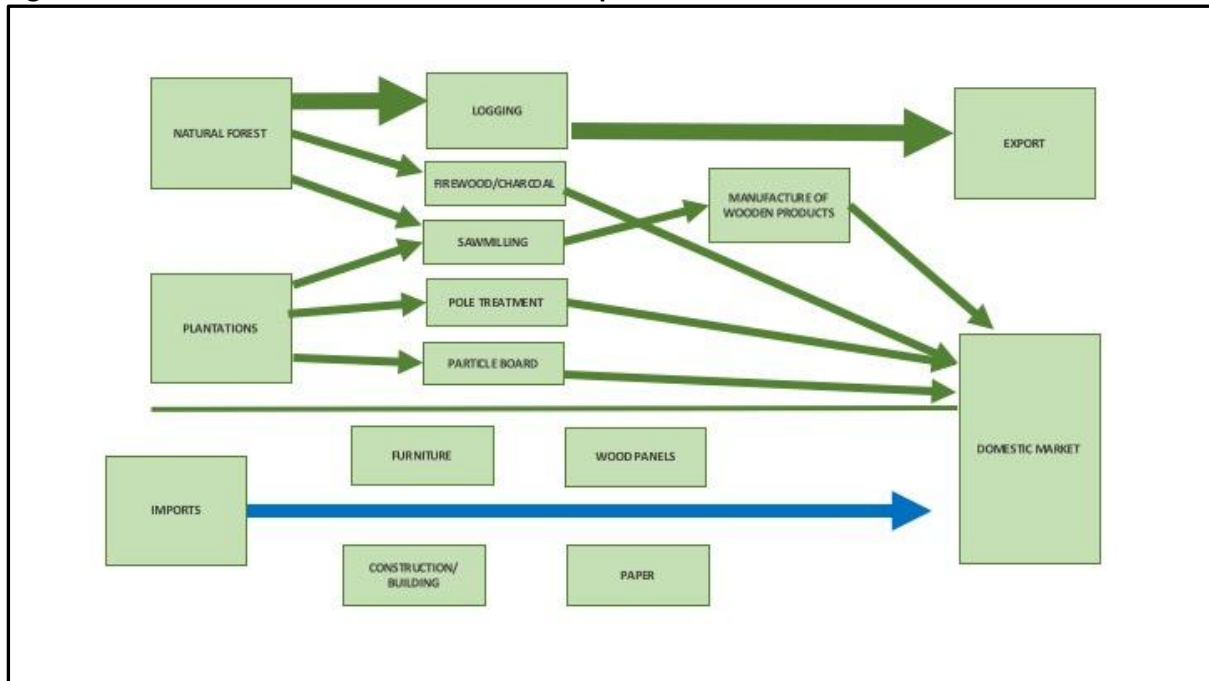
3.2. Mozambique

Forestry value chains in Mozambique are very poorly developed, and most current activity is around either unprocessed or minimally processed logs, most of which are exported. There are a number of reasons for this, including: the high incentives for illegal logging and export of those logs, which has reduced options for primary processing; the very small plantation forestry sector; limited foreign investment until fairly recently; limited access to capital for local businesses; limited local demand for many timber products – i.e. not enough “critical mass” of domestic demand to support processing; and poor infrastructure. This is changing, however, and will change even more significantly over the next twenty years. The most significant changes are likely to be seen in the pulp and paper value chain, and upstream into plantations.

3.2.1 Wood to Timber

The wood to timber value chain for Mozambique is set out in Figure 3.

Figure 3: Wood to Timber Value Chain Mozambique



Source: Compiled by author

Most of the wood-to-timber value chain activities in respect of natural forests is around the export of logs, or minimally processed (rough sawn) logs. This is also the biggest activity across the entire timber sector, by volume and value. Most of these logs go to China, through Mozambique’s various deep water ports. The natural forest logging sector contains relatively large numbers of small-scale operators, most of whom are selling unprocessed logs directly to traders. A 2014 report (EIA, 2014) estimated that 76% of all log exports from Mozambique were illegal. The recently announced ban on the exports of all logs of all species will have a negative impact on the sector, but probably to a limited extent only, given the many ways in which the current ban is being circumvented.

Timber exports to China (whether designated as “logs” or as “processed timber”) make up about 93% of Mozambique’s annual timber exports of about 560,000m³, which in turn make up about 35% of total timber production (from both natural forests and plantations). Clearly, current levels of timber extraction from natural forests is way above Mozambique’s Lower Annual Allowable Cut of 515,000m³ and thus a clear contributor to deforestation. It should be pointed out that a lot of the wood consumed in Mozambique is probably also “illegal” (in that the operators are not registered or paying the relevant taxes on the wood), since this is the lowest-cost way of extracting it.

Another big component of the wood-to-timber value chain is firewood and charcoal. Most households rely on biomass energy for a significant amount of their energy requirements. Firewood is the preferred fuel in rural areas, and charcoal in urban areas. Over time we would expect that both firewood and charcoal demand will decline as electrification increases, with the latter probably falling faster since urban areas tend to be electrified ahead of rural areas. Informality in this sector is very high. FLEGT (2014) quoted a 2007 study that put annual charcoal production at 165,000m³ per annum. It also estimated that more than 90% of firewood and charcoal is produced by rural households. There are thought to be around 150,000 charcoal enterprises and 9,400 firewood enterprises, with most (more than 95%) of these being operated by rural households.

The sawmilling and industrial timber sector is relatively small. Although – as discussed above – many forestry concession holders do not operate processing facilities, most owners of processing facilities hold concessions (or, as in the case of IFLOMA) own plantations. There is very little official data available on the wood-to-timber value chain or domestic wood processing. A comprehensive 2014 study undertaken by the European Union’s Forest Law Enforcement, Governance and Trade unit attempted to obtain this information from DNTF, but was unable to do so. It appears that the data are simply not collected. The last set of data are for 2005, which indicated a total of 179 processing units, although only 123 of these were listed as “operational”. No additional data was provided for the type of sawmill, products produced, or production capacity (FLEGT, 2014).

It does appear that most of the processing is sawn timber for the local market. Most of the equipment used in these sawmills is very old and outdated (a lot of timber is sawn by hand), and there has been very little investment in value-adding facilities such as drying facilities.

Most of the construction (including joinery) and industrial timber and timber products used in Mozambique are imported, predominantly from South Africa. Softwood (pine) is used in house construction, and hardwood poles are also imported from South Africa for use as electricity poles.

IFLOMA operates a sawmill at Messica, processing logs from its own plantations. Apart from this sawmill, the Messica complex also has a pole treatment plant and a particle board plant. The sawmill is estimated to have annual capacity of 26,000m³ and the particle board plant of 20,000m³ per annum (FAO, 2105). These plants are probably not operating at full capacity, due to limited supply of timber.

The main processed timber items produced in Mozambique are sawn timber, railway sleepers, wooden poles, wooden flooring, furniture, and door and window frames. These are all produced in relatively small quantities, and most are sold into the domestic market. Limited amounts of sawn timber and railway sleepers go to South Africa, and a small amount of poles goes to Malawi and other neighbouring countries. Domestic consumption for timber products in Mozambique is increasing steadily, but this is reflected mostly in increasing imports rather than increased local production. There is practically no R&D in the Mozambiquan forestry sector around the use of indigenous species to replace imports of wood such as softwoods for construction.

This is likely to change, however, in the next 8 to 12 years as plantation wood becomes available in greater quantities, and as the processing industries that are mandatory for plantation investors come on stream. There are significant plans to expand the wood processing sector in Mozambique by these investors: Green Resources – a private Norwegian company – is an important foreign investor in the forestry-to-timber value chain in Mozambique. It owns two thirds of FSC certified plantations in Africa outside of South Africa. Its Niassa plantation became the first FSC certified plantation in Mozambique in 2011. It processes wood from its own plantations and is expected to do so at an increasing rate as new plantations start to mature. The company has indicated that its biggest future expansion plans in the future are in Northern Mozambique.

In addition to the sale of pulpwood into other processors, Green Resources has indicated that it will build and operate a wood chip mill, a pole treatment plant and an MDF mill. The MDF mill is planned to start operations in 2018. It is planning to sell these products into the local and regional market, as well as foreign export markets. Green Resources’ pole treatment plant aims to eventually replace a

portion of the transmission poles currently imported from South Africa. The company plans to operate FSC certified plantations, which will support its pulp export plans (see below).

3.2.2. Wood to Pulp and Paper

There is currently no paper production on any meaningful scale in Mozambique, and almost all paper is imported (more than US\$50 million each year), mostly from South Africa. However, significant investments in the wood to pulp and paper value chain are underway, which could turn Mozambique into a net exporter of both paper and pulp. The single biggest investor is Portugal's Navigator Group (via Portucel Mozambique), which has committed US\$2.6 billion to the development of plantations and pulp and paper mills. Their plan is to develop a production capacity of around one million tons a year, and to supply paper from the Mozambiquan facilities to Asian markets. Navigator is Europe's largest producer of bleached eucalyptus kraft pulp, and one of the five largest producers of uncoated paper.

In September 2015, the company's tree nursery facility in Mozambique was opened. It has been designed as the largest nursery facility for cloned plants in Africa (surpassing Sappi) and is already growing more than 12 million plants. The nursery reportedly cost almost six million Euros. The company is well on the way to setting up the planned plantations, having received environmental approval in 2015.

Navigator itself (in its latest annual report) has acknowledged the importance of both political stability in Mozambique and the construction of infrastructure for its project to develop as planned.

Green Resource's Lurio project aims to establish 126,000 hectares of hardwood plantations in Nampula province and an associated pulp mill (once the plantation is at maximum capacity). Prior to the pulp mill, the company plans to sell wood chips and pellets. They plan to export the pulp via the deep-water port at Nacala. There seems to be a strong preference among these new investors in Mozambique to either plant new hardwood plantations, or to switch existing pine plantations to hardwood, all to take advantage of the international market for pulp. Green Resources reports that road and rail links to Nacala are in the process of being upgraded, and that its plantations and processing facility will be located around this infrastructure. Nacala is located on the northern coast of Mozambique and is the deepest natural port on the east coast of Africa. (The infrastructure is being extended primarily to facilitate coal exports.)

3.2.3. Wood to Furniture

There is a large informal furniture manufacturing sector in Mozambique, about which there is very little official data. FLEGT (2014) reports that these informal carpenters are producing "surprisingly high quality" furniture using very basic tools. They use mostly sawn wood that they buy from sawmills or which is supplied by their clients. Much of this furniture is very well-priced. It is either sold to clients that have commissioned it, or in local markets, or in informal retail outlets.

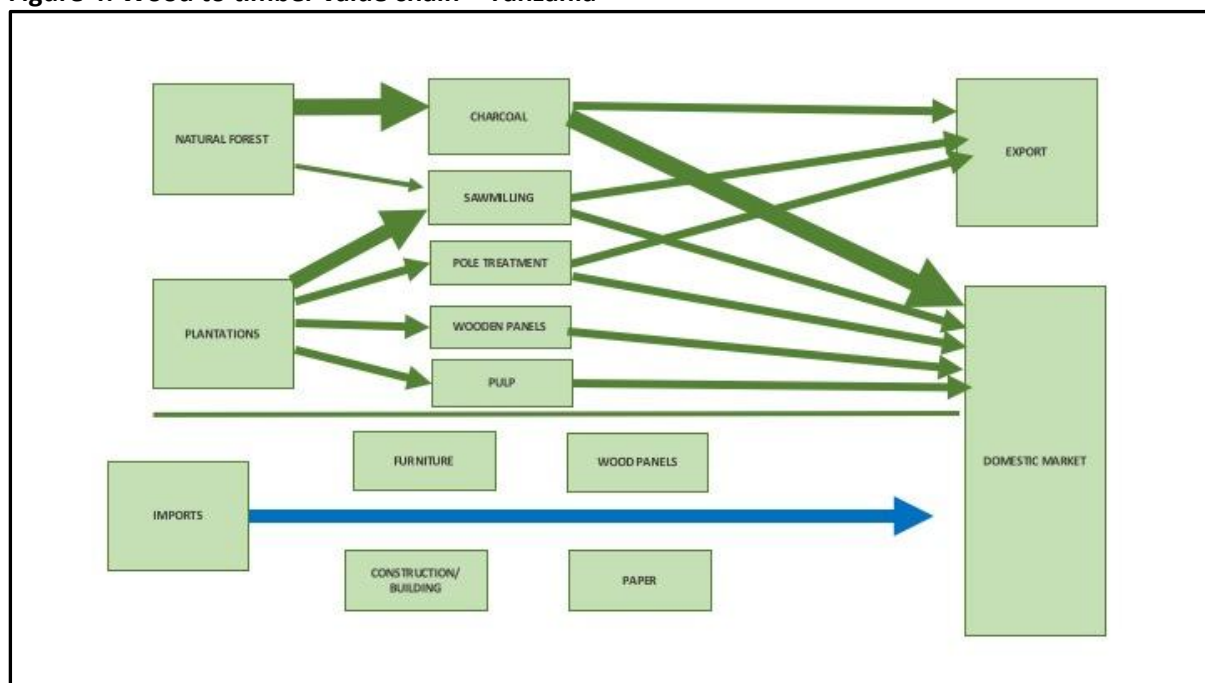
There is practically no export of furniture from Mozambique (although one report mentions a local design facility that is exporting small amounts of products). The majority of Mozambique's furniture imports used to be from South Africa, but in 2015 the majority of the US\$30 million of furniture imports were from China, with South Africa in second place. More than half of these imports are "general furniture".

3.3. Tanzania

3.3.1. Wood to Timber

The wood to timber value chain for Tanzania is as set out in Figure 4.

Figure 4: Wood to timber value chain – Tanzania



Source: Compiled by author

Most of the timber-harvesting companies in Tanzania operating in natural forests are small, using very old technology. They tend to have low wood recovery rates – below 35% (Dinh and Monga, 2013). Sawmills (which include both hand sawing and mechanised saw milling) make up the biggest part of the timber processing sector in Tanzania – accounting for about 70% of total processing capacity. Sawmillers mostly process softwood, and most of the industrial roundwood supplied to these sawmills comes from government-owned plantations (which plantations supply around 80% of the market). There are around 400 registered sawmills in Tanzania (there has been a big increase in their number over the past twenty years), most of which are very small, employing between five and eight people (FLEGT, 2014b). In 2003 the Norwegian company Green Resources re-opened the government-owned Sao Hill wood processing facility.

Table 17: Largest harvesting permits allocated from government plantations (2014)

Company	Harvest volume allocated (m ³)
Mufindi Paper Mill	110,000
Mufindi Woodpoles Plant and Timber	17,000
Mufindi Wood Plantation and Industries	13,000
Sao Hill Industries	10,000
Fibreboard (2000)	8,412
Ihembe Timber Products	5,300

Source: GAI, 2014

The vast majority of these sawmills are set up to process softwoods, rather than hardwoods, reflecting the current composition of plantations in Tanzania. This means that they are unable to – or face great difficulties – in processing hardwood such as eucalyptus, which is likely to slowly increase its share of plantations. Most of these sawmills seem to be operating at below 50% capacity, due to a shortage of roundwood (ibid). Very few of them have any value-adding facilities, such as drying wood. This means that most of the treated wood used in Tanzania (particularly for furniture) is imported. The low level of capacity utilization means there is good potential demand for plantation timber in the sawmilling industry.

The single biggest market for sawn timber in Tanzania is the construction sector. Most of the sawmillers are not “integrated” operations, in that they do not have the facilities to process their wood waste, such as into the manufacture of particle board. The main limitation on this is capital. The bigger new market entrants do have capital for these purposes (as discussed below) and this will probably mean that many smaller sawmillers may go out of business due to their inability to compete with these integrated processors.

Many of the sawmills have two constraints: the first is that most are set up only for softwood, and so cannot process hardwood, which is likely to be an increasing share of available timber over the next ten years, given planned plantation expansion details. The second is that many of the smaller sawmills cannot process logs with a diameter greater than 35cm (FAO, 2015) which means that they are unable to produce the larger and more valuable lengths of wood.

TANWAT) is the largest private forestry company in Tanzania. Its traditional product was tannin, produced from wattle bark, but as the market for tannin has declined, it has expanded into other parts of the forestry processing sector. TANWAT is one of the few producers of kiln-dried (pine) timber, and also produces eucalyptus transmission poles, as well as electricity from a wood fired power station.

Green Resources has recently upgraded its timber processing operation at Sao Hill, where it operates a two-line sawmill, a pole treatment plant and a joinery manufacturing facility.

Sawn wood in Tanzania is generally of a fairly low standard and used either in the domestic market, or shipped across the border to Kenya, which has a big wood deficit. Sawn wood is used for the manufacture of construction products (such as wooden roof trusses), building products such as joinery and door and window frames, as well as limited amounts of packing material. There is also a small amount of plywood manufacturing, but this is limited by a shortage of raw materials and old equipment. There are about 113 entities operating in secondary wood processing, employing about 3,400 people (Dingh and Monga, 2013), but only six of these were recorded as employing more than 100 people (ibid).

Around 15% of sawn wood output is exported, with the largest markets being China, India and Kenya. Teak is an important component of sawn wood exports.

There are a small number of pole treatment plants, and the number of poles being produced increased from 905 in 2004 to 31,200 in 2008. Poles are manufactured from plantation hardwood – eucalyptus. There is a strong demand for poles from Tanzania’s electrification programme, one of the biggest in Africa. Only a small percentage of these are being produced in Tanzania, with much of

the demand being filled by imports from South Africa. Our interviews suggested that the main reason for this was a lack of suitable quality poles for transmission being produced in Tanzania. This, in turn, reflects the low level of silviculture skills in the sector. As these improve, we should expect that a greater share of the poles for the local market will be produced domestically. However, as the electrification programme gains momentum, the annual demand for transmission poles could rise to more than 300,000.

Kenya is also an important market for wooden poles, where they are used for a variety of purposes, including fencing.

There is limited production of wood panels, through three factories. There are, however, plans for building a new plywood mill and possibly an MDF plant by TANWAT.

Despite the value of Tanzania's natural forests, by far the biggest part of harvested natural wood goes towards the manufacture of charcoal. Charcoal is the main energy source in urban areas by a considerable margin, and demand is growing. A 2014 study estimated that the charcoal value chain is worth some US\$600 million per annum (GAI, 2014), or around 500,000 tons per annum. As much as 80% of the wood harvested from natural forests may be finding its way into the charcoal value chain. There are a very large number of small businesses in this sector, most of them unregistered.

Over the past five years there have been a number of significant natural gas finds in Tanzania. The latest find – by the UAE's Dodsai Group – is valued between US\$8 billion and US \$11 billion. Total gas reserves identified to date total almost 11 trillion cubic feet. These gas reserves should, over time, significantly change Tanzania's energy consumption structure, and greatly reduce the cost of energy.

3.3.2. Wood to Pulp and Paper

Pulp and paper production make up about 20% of Tanzania's timber processing sector (Dinh and Monga, 2013). There is only one pulp and paper mill, operated at Mufindi by Mufindi Paper Mills. MPM was privatised and then sold in 2004 to Rai Group, a Kenyan company. It produces about 40,000 tons of kraft paper per annum, which is sold into both domestic and export markets (mostly in Eastern and Southern Africa).

Tanzania produces less than half the paper it consumes, and thus imports paper, mostly from South Africa (a big component of which is newsprint), but also from the EU. Pulp and paper accounts for about 8% of all Tanzania's imports from South Africa (UNEP, 2015). Mufindi is reportedly planning to increase its production capacity to 100,000 tons per annum (our interviews suggested that the mill is running at very low capacity utilization). Mufindi will also create demand for wood through its own electricity generation plant that operates on wood residues. It has been raising capital to increase the amount of electricity it produces (it seems that lack of electricity has been a key factor for the low capacity utilization of the paper mill) and any excess will be distributed into the national grid.

3.3.3. Forestry to Furniture

The local furniture sector is small, using mostly locally produced hardwood. Some manufacturers are processing imported treated wood, due to the lack of such timber on the local market.

The main reason for the high levels of imported wooden furniture into Tanzania is the high local manufacturing costs. Dinh and Monga (2013) calculated that producing a wooden chair in Tanzania

cost US\$30 in Tanzania, about double the cost of places such as China and Vietnam. This is despite the fact that wood is cheaper in Tanzania than in China, and the fact that Tanzanian wages are less than half of those paid in China. The key issue is the very inefficient nature of manufacture in Tanzania, which results in very low productivity (in terms of output per person), very high wastage of materials, and high rejection levels. This, in turn, can be attributed to low skills levels (management and operations), and old capital equipment.

Economic growth in Tanzania is likely to increase the demand for furniture in that country, but this will probably be filled mostly by increased imports (probably from China).

There is, however, clearly potential for high-end artisan furniture manufacture in Tanzania. In 2009 a South African (Elmarie van Heerden) set up The Green Room in Dar es Salaam. This furniture and homeware retailer also has its own manufacturing facility in addition to buying in from small furniture makers across the country. The business is reportedly doing well, and is a good illustration of the latent potential in the sector.

3.4. Regional Summary

There are significant differences between the South African forestry sector and that in Mozambique and Tanzania, which is the basis of the current low level of regional integration. Most specifically, while the South African sector is dominated by plantations and medium and large companies, Mozambique and Tanzania are characterised by natural forest resources and high levels of participation by small and very small informal market participants, producing mostly low value-added products. South Africa produces a much higher percentage (of total output) of value-added forestry products than either Tanzania or Mozambique.

There is limited trade in forestry products among the three countries. This is as a result of logistics (forestry products – particularly raw timber – are not easily transported over very long distances) and the very different domestic markets for forestry-based products. In Tanzania and Mozambique demand for forestry products is dominated by low-value products such as firewood, charcoal and basic industrial/construction wood.

There is very little integration or duplication among the various forestry value chains at present. The majority of production in all three countries is either for domestic consumption, or for export to third-party destinations.

Forestry and forestry-related products is not a significant regional economic sector at present. However, over the next 20 years this is likely to change dramatically, as the area under plantation grows in Mozambique and Tanzania, and economic growth in the region supports an increase in construction and infrastructure expenditure. The ability of the region to maximise the positive benefits of this expansion on employment and domestic income will be determined to a great extent by the ability to develop a better **integrated regional value chain**, focusing on retaining a greater share of the various forestry value chains within the region.

4. DEVELOPING REGIONAL VALUE CHAINS IN THE FORESTRY SECTOR

Given the information in each of the country reviews, what is the potential for developing regional value chains and growing the forestry sector across the region? What are the main constraints and opportunities in this regard, and what are the implications for regional policy initiatives?

It is important to differentiate between opportunities for regional value chain development and investment opportunities for companies in other countries. For example, it may be attractive for a South African investor to set up a plantation and pulp mill to produce pulp for export to Asia in Mozambique, but this is not the same as regional value chain development. This report focuses on the ways in which the entire region can benefit from the development of forestry value chains.

4.1. Key Findings

It should be clear from the analysis presented in Sections 2 and 3 that most parts of the forestry sector are **spatially bound** to a considerable degree by logistics and infrastructure, to a much greater extent than many other economic sectors. That is, it is not possible or financially feasible to have a high degree of spatial distance among various parts of many of these chains, most particularly plantations and primary processing. The high costs of transport and the relatively low value of many of these products imply that economic viability is determined in many instances by proximity. In the case of Mozambique, there are further boundaries to spatial division of various parts of the value chain due to the strong regulatory environment around local beneficiation. A *regional* value chain is really feasible only where there are higher-value products being produced (such as dissolving pulp or high end furniture or particular board) and where there are suitable logistics (such as rail, deep water ports and suitable roads).

These spatial constraints on the forestry sector are compounded by domestic policy in both Tanzania and Mozambique, which have prioritised local beneficiation. As a result, there are limitations on the export of unprocessed wood, as well as access to land (potential investors need to show that they intend to engage in beneficiation as a criterion for gaining access to land for plantations.)

This does not mean that there are no opportunities to develop the regional value chain – there are many. Some of these are directly related to chain activities (i.e. directly in the production of forestry-based products and the trade thereof). Others are related to peripheral activities that will create greater and better opportunities within the chain. In addition, there are a number of activities that countries can collaborate on that will support the growth of the forestry sector across all three countries.

Many of these opportunities arise because of the differences among the forestry sectors of the three countries, as well as their similarities. There are a number of key conclusions that arise from the research, which are the basis on which we have made our policy recommendations. These are:

- On the basis of plans being made by companies like Sappi and Navigator Group, it is clear that **over the next 20 years the region will be a significant site of pulp production**, with Mozambique leading Tanzania until the latter can implement a land access system that facilitates more plantation development. To be part of this growth, South Africa needs to increase its hardwood plantations. It also makes sense for much of the pulp manufacturing to be located in reasonable

proximity to the Indian Ocean ports of Mozambique and South Africa, i.e. that the pulp sector be concentrated between northern Mozambique and KwaZulu-Natal. Poyry – a leading forestry consultancy – has indicated that Mozambique, Tanzania and Angola are the only three countries in the world that have good potential for new plantations. The same report indicated that Asia-Pacific will continue to be the world’s largest wood deficit area.

Some of the pulp (such as that produced by Navigator) will be destined for local paper production, while some will be for the dissolving pulp (cellulose) market. This critical mass in DWP production offers skilled employment opportunities as well as the possibility of more regional local beneficiation (as opposed to exporting the dissolving pulp) to create a DWP manufacturing sector to compete with Asian countries. This could have significant regional employment creation implications. The textile sector would be a significant component of this, but other DWP manufacturing opportunities could also be explored. However, the ability of the regional economy (as opposed to the individual companies) to capitalise on this will be determined by infrastructure development, political stability, access to capital and increased skills.

- As competition for land for plantations (and other agricultural production) increases, so tensions between local communities and forestry companies will increase, and could pose a significant threat to the potential of forestry (by, for example, feeding support for groups such as Renamo). Conflicts with communities may also undermine market access (see the next point). These issues need to be addressed as a matter of urgency – policymakers cannot wait until there is a real problem. A workable solution depends on a number of factors, such as better transparency on land tenure and better collection of land use royalties to benefit local communities, and more genuine community partnerships need to be incorporated. To date, none of the new plantation developments in Mozambique or Tanzania have made a meaningful inclusion of small outgrowers, and this needs to be addressed.
- Across the forestry sector, FSC certification as well as community involvement will become more and more important factors in accessing markets, particularly in Europe and North America. Outside of South Africa, progress in these areas is low. A key factor needs to be the halt of illegal logging, particularly in Mozambique. Although this is a factor that affects natural – as opposed to plantation – forest, it has the potential to taint the entire forestry sector by association.
- The increase in the number of plantations across the three countries, together with the shortage of timber in other east African countries such as Kenya and Uganda and the growth potential of the region offer considerable primary and secondary wood processing opportunities, possibly in **a wood-processing hub located in Tanzania**. Tanzania has low wages and the natural gas discoveries should contribute to a regional advantage in electricity, as well as economic growth that will support a construction boom. Better linkages with the natural forest sector in Tanzania will also support the growth of this sector. Furniture making skills in Mozambique appear to be higher than in Tanzania, and there would be opportunities for Mozambiquan artisans in a regional manufacturing hub. Once again, it will be important to ensure that the many smaller wood processors in Tanzania have the opportunity to benefit from this. Additionally, these plans need to be supported by improved infrastructure in the region, particularly roads and railways.

- As Tanzania’s electrification process gains momentum, so the demand for charcoal will decline and hardwood from natural forests will be available for other purposes. This also means however, that a significant number of people may lose this livelihood and a strategy to support alternative livelihoods needs to be considered. The potential of Tanzania’s forest resources to generate employment and new business growth has not, we believe, been given enough consideration in official policy in that country to date, although there are signs that the Forestry Development Trust may be changing that approach.
- There are opportunities across the region for wooden furniture manufacture, particularly for high-end furniture, made possible by a combination of access to both cheap wood and labour (in Tanzania), relatively good skills in manufacture (in Mozambique), preferential trade access (via Tanzania) and management and design skills (South Africa). Taking advantage of the export opportunities offered in the higher end of the market will depend on meeting the requirements of the EU’s regulation of illegal wood, FSC certification and possibly other market differentiators, such as Fair Trade. Although many of the big new plantation developments will probably have FSC certification, it is important that natural forests and timber resources under community control also increase their level of certification, in order to maximise the value of their resource.
- There are clear challenges around logistics and skills across the regional forestry sector that need to be addressed. These are most pronounced in Tanzania and Mozambique.
- There are serious problems with access to accurate and up-to-date information on the forestry sector in Mozambique and Tanzania. Better information is a key factor that will support more effective policymaking. Accurate and comprehensive data is also important for potential investors, particularly second-tier companies (i.e. those not as large as the massive multi-nationals that currently dominate investment). These companies generally cannot afford to embark on their own data collection exercises, and access to a comprehensive database would assist in facilitating investment decisions.
- Government revenue collection in Tanzania and Mozambique (and particularly the latter) is being compromised by illegality, informality and corruption. Better revenue collection systems will provide the funds required for broad-based and inclusive development of the regional forestry value chains.

4.2. Policy Implications and Recommendations

What are the implications for policy that arise from our key research findings? We have divided our policy recommendations into two categories – those that are applicable to the region and those that are applicable to South Africa.

4.2.1. Regional Policy

There are a number of potentially very useful regional policy initiatives that could support the growth of the regional forestry sector. We have identified these as the following:

- Establishing a regional forestry stakeholder forum to facilitate dialogue and co-operation, and to share knowledge and information with domestic industries
- Establishing a regional forestry data initiative
- Establishing a regional forestry sector skills development initiative

- Developing a regional community participation strategy
- Developing a regional forest certification initiative (with particular reference to natural forests under community jurisdiction).
- Establishing a regional capital and capacity development fund focused specifically on increasing access to capital and skills by the small businesses in the forestry sector.

Each of these recommendations is discussed in more detail below.

Establishing a regional forestry stakeholder forum

Significant benefits can accrue to stakeholders – both public and private – through greater dialogue. This will benefit both national forestry sectors as well as the region. In our research we came across companies that expressed interest in regional expansion, but had no idea exactly where to start. A regional forestry stakeholder forum will have particular benefits for medium-size companies, which might not otherwise have the resources or the connections to engage with public sector officials in different countries. It also will provide good opportunities for business-to-business connections to be made. These are the basis on which many smaller businesses can build relationships that will allow them to expand their regional trade.

A regional stakeholder forum should thus include government officials, private companies and NGOs that are active in the sector. Its aim would be to facilitate information sharing and opportunities for stakeholders to meet. It need not be an extravagant or expensive arrangement, merely a regular forum for stakeholders to meet and discuss joint responses to regional challenges, where these are applicable.

Establishing a regional stakeholder forum would be a good first step to creating an institutional structure to oversee the remainder of the recommendations, described below.

Establishing a regional forestry data initiative

The lack of comprehensive and accurate data on the regional forestry sector – including Tanzania, but most particularly Mozambique, is an impediment to effective policymaking around the sector. It also increases the cost of doing business, particularly for those companies that cannot afford to undertake their own in-country data collection and feasibility studies.

South Africa – via Forestry South Africa – has some good skills in this regard. There are also a number of NGOs active in Tanzania and Mozambique that are active in data collection. A forestry data initiative could be structured as a technical data working group among the three countries, supported by an easily accessible on-line data portal.

Establishing a regional forestry sector skills development initiative

The level of skills in the sector is a key constraint. Skills appear to be a problem in many places, but the biggest gap seems to be in silviculture, with the main problem being that forestry students in Mozambique and Tanzania are not getting sufficient practical experience in well-managed plantations. This is an area in which South Africa excels.

We would recommend that the dti investigate the establishment of a skills development exchange programme, incorporating universities from all three countries. The programme would make funds available for funding students who wish to study forestry management and related fields (such as

plant genetics) and incorporate a strong exchange component, where students from Tanzania and Mozambique could come and do long (six months or so) practical work experience on South African plantations.

Developing a regional community participation strategy

As discussed above, it is imperative for the long-term sustainability and competitive advantage of the regional forestry sector that its expansion is done in a way that includes local communities, and creates meaningful opportunities for them to benefit from that expansion. Conflict with communities will not only create potential problems over access to land, but may also threaten export of many products to places like the EU.

We recommend that this project is undertaken as an initiative among the three governments, which would then issue guidelines for companies wishing to acquire access to land or other resources, in much the same way that Mozambique currently ties access to land to the building of processing capacity.

This may be a contentious issue in the region, but the longer it is ignored the greater the long-term potential for undermining the development of the sector.

Development of a regional forest certification initiative

Having more natural forests FSC certified will create additional high-value markets for a wide range of processed timber products, particularly in exports. FSC certification is one way in which community forestry initiatives can create meaningful livelihoods, by giving communities the opportunity to access these high-value markets.

South Africa has a clear advantage in the certification of forests, and this could be to the benefit of the entire region. One way to achieve this goal would be to lobby for donor funding to establish a regional certification initiative that would train people in this area, and also subsidise the cost of certification for smaller enterprises.

Establishing a regional capital and capacity development fund

Across the region, smaller timber processors are using old equipment, producing mediocre quality product, wasting timber and losing out on market opportunities because they are unable to produce a high-value product. The key reason for this is the inability to access capital in an affordable manner. Low levels of technical and management skills (i.e. “capacity”) are also a constraining factor. Establishing a regional fund that makes capital available to these enterprises and gives them access to capacity development programmes could thus have a significant impact on their efficiency. It would also ensure that smaller enterprises are able to remain competitive and benefit from the expansion of the sector.

4.2.2. South African policy

A number of initiatives are already underway in the forestry sector in South Africa, and it is not our intention to duplicate any of these. However, for South African companies in the forestry sector to capitalise on the trends identified in this report, the following issues need to be considered.

Plantation expansion

South African wood processors – most particularly those engaged in the production of pulp from hardwood – need access to more raw materials. There is also a good export market in hardwood chips. There is thus an urgent need to expand the area of plantations – particularly eucalyptus. The benefits of this will be spread among both large and small growers, since growers such as Sappi plan to include a large number of small outgrowers in any expansion plans, and the wood chip market benefits many smaller timber producers.

The single biggest impediment to the expansion of hardwood plantations in South Africa is the laborious and time-consuming process of obtaining environmental approval, most particularly water licences. This process urgently needs to be made simpler and more efficient. We recommend that the dti's forestry desk engage with the Department of Water Affairs to discuss how this could be achieved.

Access to finance for small outgrowers

As indicated above, there are many opportunities for small timber outgrowers to benefit from plantation expansion, and this will have a positive impact on rural poverty. However, there are currently no public finance programmes suitable for these timber growers, due to the long periods that they must wait between planting and harvesting. None of the existing agricultural or small business support programmes are structured to facilitate this, despite the fact that these timber growers almost always have a guaranteed market for their product, and thus represent a very low risk loan category.

We recommend that the dti engage with the Department of Agriculture, Forestry and Fisheries (DAFF) and the Department of Rural Development and Land Reform to investigate possibilities around establishing a new finance scheme that focuses specifically on small timber outgrowers.

Research and development

South Africa is the leading country in the region in forest management and most processing. The country also has the highest level of skills in the sector. However, for South Africa to leverage that base and to take advantage of the likely regional expansion of the forestry sector, greater funds need to be invested in research and development, particularly around finding new or replacement (substitution) uses for the significant natural forest resources

Skills in the furniture sector

There is clearly a problem with skills in the local furniture sector, particularly in the higher-end of the market, where a particular set of artisan skills are required. We would encourage the SETA operating in the furniture sector to consider the re-introduction of an apprenticeship to replace the current learnership programme, which is not working for these businesses.

REFERENCES

- DAFF. (2015). *A profile of the South African Forestry Market Value Chain*. Department of Agriculture Forestry and Fisheries. Pretoria
- Dinh, H. T. and Monga, C. (2013). *Light manufacturing in Tanzania. A reform agenda for job creation and prosperity*. World Bank. Washington D.C.
- Dti (the). (2016). *Forestry Beneficiation Framework for South Africa*. Draft document. Department of Trade and Industry. Pretoria.
- EIA. (2014). *First class crisis. China's criminal and unsustainable intervention in Mozambique's Miombo Forests*. Environmental Investigation Agency. London
- FAO. (2015). *Country Report Mozambique*. Global Forest Resources Assessment 2015. Food and Agricultural Organisation. Rome.
- FLEGT. (2014). *Forest governance and timber trade flows within, to and from Eastern and Southern African countries: Mozambique study*. Forest Law Enforcement, Governance and Trade. European Union.
- FLEGT. (2014b). *Forest governance and timber trade flows within, to and from Eastern and Southern African countries: Tanzania study*. Forest Law Enforcement, Governance and Trade. European Union.
- FSA. (2015). *South African Forestry & Forest Products Industry Facts 1980 – 2013*. Forestry South Africa.
- Green Advocates International (GAI). (2014). *Scoping Study of the Forestry Sector for the purpose of including the industry in Revenue Disclosure through the Tanzania Extractive Industries Transparency Initiative*. Green Advocates International.
- Genesis. (2005). *The contribution, costs and development opportunities of the forestry, timber, pulp and paper industries in South Africa*. Genesis Analytics (Pty) Ltd. Johannesburg.
- IDC. (2014). *An Analysis of the competitiveness of South Africa's sawmilling industry*. Industrial Development Corporation of South Africa Limited. Sandton.
- IIED. (2013). *Investing in locally controlled forestry in Mozambique. Potential for promoting sustainable rural development in the province of Niassa*. International Institute for Environment and Development. London.
- Nhancale, B., Mananze, S., Dista, N., Nhantumbo, I. and Macqueen, D. (2009). *Small and medium forest enterprises in Mozambique*. IIED Small and Medium Forest Enterprise Series No. 25. Centro Terra Viva and International Institute for Environment and Development, London, UK.
- UNEP. (2015). *Forest ecosystems in the transition to a green economy and the role of REDD+ in the United Republic of Tanzania*. United Nations Environment Programme.
- PAMSA. (2016). *South African Pulp and Paper Industry: Summary findings on 2015 production, import and export statistics*. Paper Manufacturers Association of South Africa.
- Sappi. (2015). *Annual Integrated Report 2015*. Sappi Limited.
- Sawmilling SA. (2014). *Sawmilling in South Africa*. Sawmilling South Africa.
- United Republic of Tanzania. (2011). *Integrated Industrial Development Strategy 2025*. Ministry of Industry and Trade. Tanzania

ORGANISATIONS INTERVIEWED

Block and Chisel

Department of Trade and Industry – Mozambique Desk

Forestry Trust – Tanzania

Hartmann and Keppler

Merensky Timber

NCT Forestry Co-operative

PG Bison

Sappi Forests

Sawmilling South Africa

The Green Room - Tanzania