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Job creation in
agriculture, forestry
and fisheries in South
Africa

An analysis of employment trends,
opportunities and constraints in
forestry and wood products
industries

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PLAAS Working Paper 52: Job creation in agriculture, forestry and fisheries in South Africa: an analysis of employment trends, opportunities and constraints in the forestry and wood products industries

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ABSTRACT

This report is one of five studies of opportunities and constraints related to employment creation in rural South Africa, with a view towards informing policy. South African forestry and wood products industries are well established, internationally competitive, and contribute significantly to GDP and export earnings. Plantations and downstream industry currently provide an estimated 236 502 jobs. Growth and employment creation in the sector are constrained by some key factors. Limited water availability in catchments suitable for afforestation limits the total extent of timber plantations. This in turn limits the supply of timber to value chains. Trends towards labour outsourcing and mechanisation have negatively impacted on the quality and number of jobs in forest plantations. Despite these limitations, estimates compiled in this study suggest that some 82 000 jobs and livelihood opportunities could be created through restructuring and revitalisation of existing timberlands as well as expansion of plantations in communal lands. Key to realising these opportunities are accelerated land reform, building effective and democratic governance within communal lands, provision of forestry development finance, improving support services through public-private partnerships, building capacity and political will in the public sector, improving transport infrastructure and lowering transport costs, and supporting legality and certification of emerging growers. Significant additional opportunities for job creation lie in further industrialisation of forestry value chains. Key interventions recommended include developing biomass energy markets and technology, further industrialisation of the dissolving wood pulp value chain, research and development in wood waste bio-refinery, and support for furniture making and wooden construction technology.

Keywords: South Africa, employment, mechanisation, job creation, forestry, timber plantations, wood product value chains, land reform

ACRONYMS

AFC	Amathole Forestry Company
AsgiSA	Accelerated and Shared Growth Initiative for South Africa
BBBEE	Broad Based Black Economic Empowerment
BCEA	Basic Conditions of Employment Act
BFAP	Bureau for Food and Agricultural Policy
CPA	Community Property Association
DAFF	South Africa Department of Agriculture Forestry and Fisheries
DRDLA	South Africa Department of Rural Development and Land Reform
DoL	South Africa Department of Labour
DPE	South Africa Department of Public Enterprise
DTI	South Africa Department of Trade and Industry
DWA	South Africa Department of Water Affairs
DWP	Dissolving Wood Pulp
DWS	South Africa Department of Water and Sanitation
ECDC	Eastern Cape Development Corporation
ECRDA	Eastern Cape Rural Development Agency
EIA	Environmental Impact Assessment
FSA	Forestry South Africa
FSC	Forestry Stewardship Council
GDP	Gross Domestic Product
HR	Human Resources
ICFR	Institute for Commercial Forestry Research
IDC	Industrial Development Corporation
IPAP	Industrial Policy Action Plan
IPILRA	Interim Protection of Informal Land Rights Act
IRP	Integrated Resource Plan
ITA	Ingonyama Trust Act
ITC-SA	Institute for Timber Construction in South Africa
KLF	Komatiland Forests
KZN	KwaZulu-Natal Province
LRA	South Africa Labour Relations Act
MCT	Mabandla Community Trust
MAI	Mean Annual Increment
MTO	Mountains to Oceans Forestry
NCT	NCT Forestry Cooperative
NMW	National Minimum Wage
NPO	Non-Profit Organisation
OHSA	South Africa Occupational Health and Safety Act
PAMSA	Paper Manufacturing Association of South Africa
PEFC	Programme for the Endorsement of Forest Certification
RFM	Rural Forest Management
SA	South Africa
SAFCOL	South African Forestry Company
SAQA	South African Qualifications Authority
SEA	Strategic Environmental Assessment
SFP	Singisi Forest Products
SOE	State Owned Enterprise (in this study, this refers to Komatiland forests)
SQF	SiyaQhubeka Forests
TIMO	Timber Investment Management Organisation
TL	Traditional Leaders

GLOSSARY

Biomass energy	energy derived from burning organic matter – wood and wood waste in this study
communal land	state land held in trust for communities where customary land rights pertain, administered through traditional councils and traditional authorities
dissolving wood pulp	product produced from woodchips and used in the manufacture of a wide range products including textiles
harvesting	refers here to cutting down of trees
Mean Annual Increment	the average growth per year of a tree or stand of trees
outgrowers	small farmers producing for a large mill – here timber outgrowers producing for pulp mills and chipping plants
pulpwood	wood used to make paper
roundwood	felled timber, still in round form, with or without bark
sawlog	log of suitable size for sawing
saw-timber	output from sawmills – planks, boards, etc.
Sectoral Determination	under the Basic Conditions of Employment Act, the Minister may make a sectoral determination establishing basic conditions of employment for employees in a sector and area.
silviculture	the growing and cultivation of trees
wattle jungle	unmanaged stands of invasive wattle trees

1. INTRODUCTION

South Africa is faced with stubbornly high levels of unemployment. In the third quarter of 2016 the official unemployment rate reached 27,1 %, the highest since 2004 (Statistics South Africa, 2016). In rural areas, unemployment rates are even higher than the national average, and are increasing, exceeding 50% in 2012 (Davies, 2012). Rural unemployment has been cited as an area of particular concern for public policy. This study is one of five sub-studies under a research project titled 'Job creation in agriculture, forestry and fisheries in South Africa'. The research forms part of the Carnegie 3 Inquiry into strategies to overcome rural poverty and inequalities (University of Cape Town SALDRU, 2014). The overall objective of this study is to estimate the potential for employment creation in selected producer sub-sectors, with a view to proposing policy options aimed at facilitating job creation in South Africa's rural economy. The other sub-studies examine rural job creation in fisheries, small-scale irrigation, deciduous fruit, and citrus.

Forestry plantations cover some 1,2 million hectares of land in South Africa, second only to maize in land use extent (Godsmark, 2013). Timber produced from these plantations provides the basis for a well-developed forest products industry. The primary constraint on growth and expansion in the timber and pulp and paper industry is availability of raw material – wood fibre. South Africa is a water-scarce country and controls on afforestation with alien timber species have been in place since 1972 to protect water resources (Dobson, 2017). Afforestation licences are issued on the basis of water availability, and all but a minority of catchments suitable for afforestation in the country are now closed for further licence allocation. In catchments where licences may still be issued, other constraints apply. There consequently is very limited opportunity for plantation expansion in South Africa. Total plantation area has in fact decreased slightly over the past 10 years, from around 1,35 m hectares in 2000/01 to 1,22 m hectares in 2015/16 (Forestry South Africa, 2016).

South Africa's forestry industry is thus constrained by a single over-riding biophysical limitation: water availability in catchments suitable for afforestation. Further, the established plantation industry is dominated by large corporate players, amongst whom job shedding is the reality. Corporates own 70% of plantation land, and the majority are in the process of mechanising forestry operations to the extent possible, given bio-physical constraints of terrain. Mechanisation has led to a substantial reduction in jobs, with unskilled and semi-skilled workers bearing the brunt.

Although they control only around 20% of plantation resources nationally, private farmers with forestry plantations also play an important role in the industry and in providing employment. Although the corporate labour restructuring trends of outsourcing and mechanisation are less evident on family farms, opportunities for growth and employment creation are similarly constrained by lack of water for expansion of plantations. Labour shedding trends amongst this group are likely to be less pronounced than amongst large growers as smaller plantation areas limit the use of large harvesting machinery.

Given these conditions, at first glance, opportunities for job creation amongst the established timber growing industry appear to be very limited. The employment contribution and trends of the industry are examined here in some detail, drawing on industry statistics, key informant interviews and case studies. This information is then used to identify opportunities and constraints for employment creation within the established sector through restructuring and recapitalisation, as well as through expansion of timber plantations in communal lands, where, unlike the rest of the country, there is still significant opportunity to expand plantations.

Further industrialisation of forestry value chains additional opportunities for creation of more jobs. In order of timber volume, the main timber product value chains in South Africa are pulp and paper, saw-timber and board, mining timber, poles, and “other”-mainly charcoal and firewood. Opportunities and constraints for these are analysed and discussed here, drawing on secondary information and key informant interviews.

The important contribution of a wide variety of non-timber forest products, including medicinal plants, fruits, and honey to livelihoods of the rural poor was not included in the scope of this research. Further research is needed to further investigate and analyse this complex, dynamic and largely invisible economy of forests, its contribution to jobs and livelihoods, and how these can be safeguarded and further expanded.

Section 2 of this report outlines the objectives and methodology of this research. Section 3 provides an overview of the forestry and wood products industries in South Africa. Section 4 summarises current employment statistics in forestry and downstream industry. Section 5 discusses employment variables and trends amongst timber growers. Section 6 examines opportunities and constraints for job creation in timber production through restructuring and recapitalisation of existing timberlands, and expansion of timber plantations in communal areas. The focus of Section 7 is on opportunities and constraints for employment through further industrialisation of forestry value chains. Section 8 contains conclusions and recommendations, including guidelines for public policy.

2. OBJECTIVES AND METHODOLOGY

The overall aim of the study was to investigate opportunities and constraints for employment creation in the forestry and wood products industry. The specific objectives were to:

1. Characterise changing employment dynamics in the forestry, timber, pulp and paper industries, and compile and assess the accuracy of available employment statistics and projections;
2. Examine constraints and opportunities for job creation in the plantation/timber supply sub-sector, with a focus on restructuring and recapitalisation of existing timberlands, and expansion of timber plantations in communal areas;
3. Examine constraints and opportunities for job creation through further industrialisation of the main industry value chains;
4. Identify policies and other measures to alter the relative balance of job creation constraints and opportunities.

Research for this investigation was conducted between May and September 2016. Information was derived from both primary and secondary sources. Research comprised three main elements:

- A review of secondary information available electronically and in hard copy, including research studies, consultancy reports, and government and industry reports. Forestry Stewardship Council (FSC) Certification public summary reports were a useful source of large grower production areas and employment data;
- Interviews and discussions with industry specialists and professionals from across the forestry value chain as well as with industry associations and marketing cooperatives;
- Three case studies selected on the basis of insights they provided into opportunities and constraints for job creation in forestry and downstream

industry. Research comprised field visits and interviews with key informants associated with each case study as well as documented sources.

- Labour intensive forestry and mixed farming: the Greytown farmers case study;
- Forestry as a driver for rural revitalisation: the Mabandla case study;
- Co-operative marketing and service delivery for independent and emerging growers: the NCT Forestry Co-operative case study.

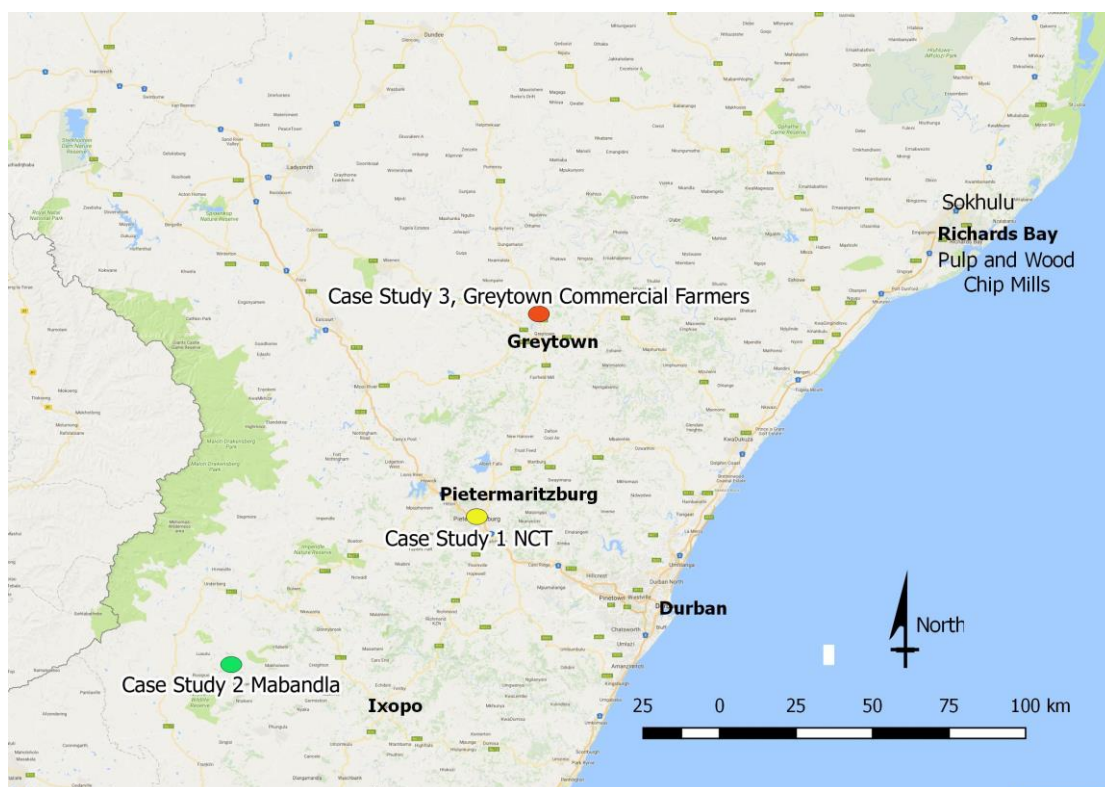


Figure 2.1 Case Study Areas

A further case study on the transfer of the Manzengwenya-Mbazwana state plantation was dropped from the research owing to difficulties in accessing information of sufficient accuracy and detail. The lack of transparency on the part of both local traditional leaders and government officials is symptomatic of obstacles to successful transfer of the plantation to local rights holders.

During the course of the research, there were several opportunities to present interim findings and engage in wider conversations about pro-poor policy imperatives in South Africa as part of the Carnegie 3 Inquiry into Strategies to Overcome Poverty and Inequality umbrella program, and the Mandela Initiative (Nelson Mandela Foundation, no date; University of Cape Town SALDRU, 2014). These dialogue sessions helped to further shape and situate the analysis presented here within broader development challenges aimed at reducing inequality and eliminating poverty.

3. OVERVIEW OF THE SA FORESTRY AND WOOD PRODUCTS INDUSTRIES

3.1 Introduction

South Africa is a small player in the global forestry market place, contributing 2% to global pulpwood production and less than 1% to global sawlog production (Sawmilling South Africa, 2014). Despite being a small player internationally, the forest industry is an important, mature, and well-developed sector of the South African economy. The combined gross value of forestry and forest products industries was R 58,2 bn in 2016, higher than the value of maize production (Forestry South Africa, 2017a). In total, forestry and forest-based industries contributed 1,53% to national Gross Domestic Product (GDP) in 2016, and 41,2% to agricultural GDP (Forestry South Africa, 2017a). The industry relies heavily on exports and competes in a global forest product market place. Forest-based industries were a net exporter of more than R29,1 bn worth of goods in 2016, the majority being converted value-added products. (Forestry South Africa, 2016). Exports amount to more than 80% of sector revenue, based on industry statistics (Forestry South Africa, 2016). The forest industry spans primary and secondary sectors of the South African economy and has forward and backward linkages into the broader economy. Commercial timber plantations provide raw material for downstream processing and manufacturing industries that collectively contributed 6% to manufacturing GDP in 2011. The linkages between primary production and the manufacturing, retail and service industries provide significant revenue and employment multipliers along forest products value chains. In addition, forest based industries have substantial direct and indirect links to the informal sector, creating significant opportunities for pro-poor development (Pogue and Institute for Economic Research, 2008).

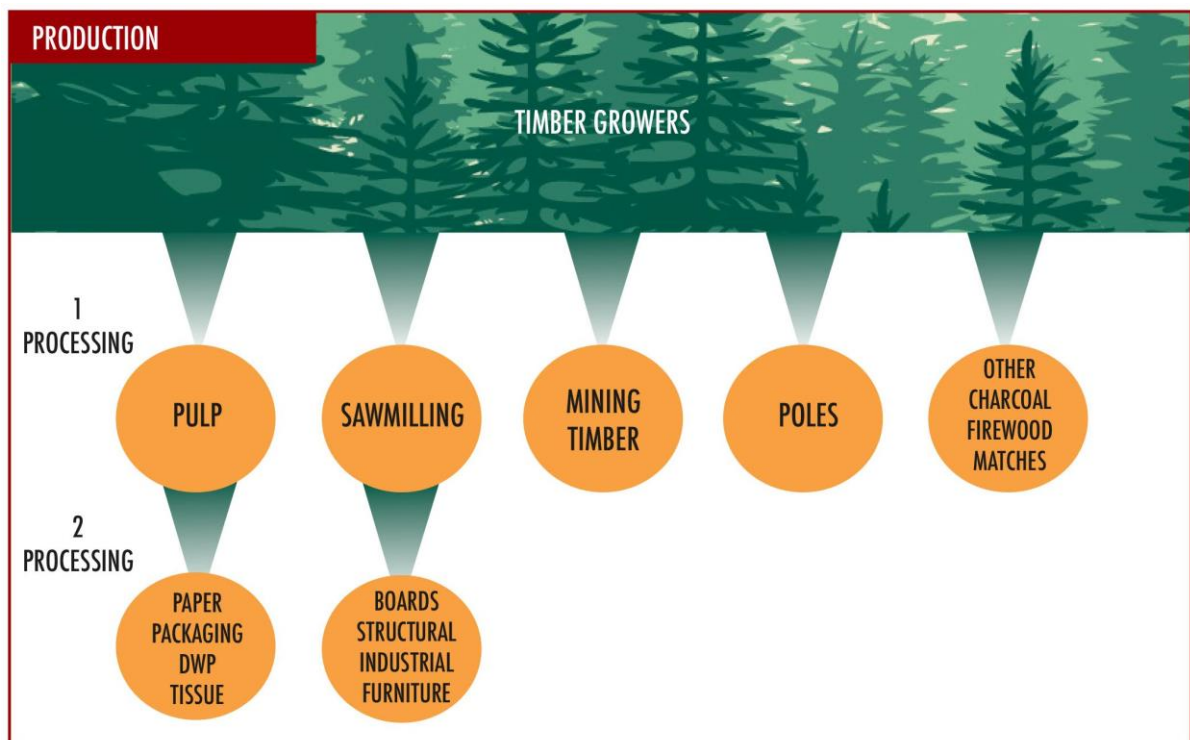


Figure 3.1 Forestry Value Chains

3.2 Plantation forestry

3.2 1 Overview

Exotic timber species were first introduced in South Africa in the 1800s to provide an alternative to timber from limited stocks in natural forests. The government invested in timber plantations to reduce dependence on natural forests and timber imports, as well as a means to encourage private sector investment in sawmilling (Owen and van der Zel, 2000). Afforestation was also a means to provide jobs to poor whites in the pre- and post-war recession years (Mabece, 2016).

The bulk of the timber plantations in South Africa are located in Mpumalanga and KwaZulu-Natal, with the remainder in Limpopo, Eastern, and Western Cape provinces. Nationally, timber plantations cover 1,27m hectares, some 1,1 % of the land area of South Africa. South Africa is a water-scarce country with only 13% of the land area suitable for rain-fed crop production. Timber plantations rank second after maize in terms of land area, followed by wheat and sugar (Godsmark, 2013).

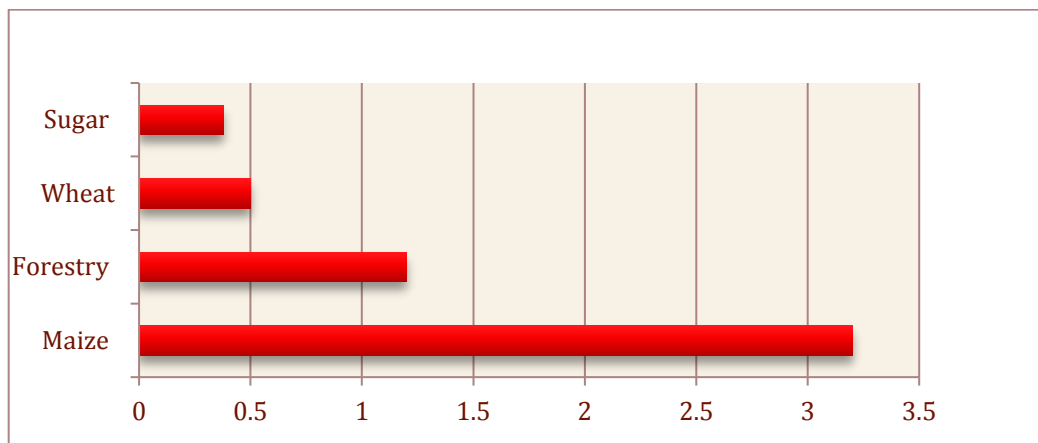


Figure 3.2 Land Use Comparisons 2013 (million ha)

Source (Godsmark, 2013)

Globally, South Africa ranks 13th in the world in timber plantation area. China, India, Russia and the USA have the largest areas of timber plantation in the world, followed by Japan, India and Brazil. Plantations make up only 7% of these forestlands; the vast majority of global timber supplies come from managed natural forests in USA, Canada, Russia, Brazil and China (Food and Agriculture Organization of the United Nations, 2015).

Climatic conditions in South Africa restrict timber plantations to the wetter eastern seaboard and mountain slopes. Within catchments suitable for afforestation, timber plantation area is capped by law to protect water flow. The total area of plantations in the country peaked in the late 1990s and has since declined by an estimated 7,7%. The decrease in plantation area is a result of clearing plantations within riparian zones and phasing out state owned timber plantations in sub-optimal areas, mainly in the Western Cape. Expansion opportunities are limited to certain catchments in former homeland areas of the Eastern Cape and KwaZulu-Natal, the only remaining catchments suitable for forestry that are not already maximally afforested.

Although South African plantations comprise 0,03% of forestland globally, they contribute 2% to global pulpwood production and 0,5% to global sawlog production,

underlining the high levels of productivity achieved by local timber growers (Sawmilling South Africa, 2014). South Africa also has one of the highest proportions of FSC certified timber in the world, positioning it to take advantage of the rising tide of global markets for sustainably produced timber. Timber is a renewable, carbon neutral resource that is increasingly being used as a green alternative to fossil fuels and other non-sustainable materials.

3.2.2 Ownership trends

Government was a leading player in the plantation industry for most of the 20th century. After free elections in 1994, this role began to change, in line with new forestry policy that emphasised the role of the State as national forestry authority. Following from this, the bulk of prime state plantation assets were privatised. High potential state-owned plantations were grouped into five packages, and lease agreements were signed with successful bidders for four of these. The remaining package, Komatiland Forests, was retained by parastatal, South African Forestry Company (SAFCOL). Table 3.1 shows ownership and extent of forestry plantations in South Africa according to most recently available information.

Table 3.1 Timber Plantation Ownership 2015

Ownership category	No. of entities	Area (ha)	% Area
Large growers - private land	13	641 497	52,6%
Large growers - leasing state land	4	131 464	10,8%
Large grower - state owned (Komatiland Forests (KLF))	1	122 578	10,0%
Large Total		895 539	69%
Medium Growers* (Commercial farmers)	1300	19 6543	16,1%
Small Growers - communal land*	31500	45100	3,7%
State owned and managed		83544	7%
Total		1277245	

Source: After FSA, 2013, with updated figures collected in this research for large growers.

**FSA estimates, no reliable information available on the number and exact area of medium and small grower plantations.*

Private growers in South Africa are typically considered in three categories; large growers (corporate entities, publically listed or with multiple shareholders, vertically integrated across the value chain), medium growers (commercial timber farmers with family shareholders), and small growers (small ventures usually run and managed by family members, - mostly on communal land).

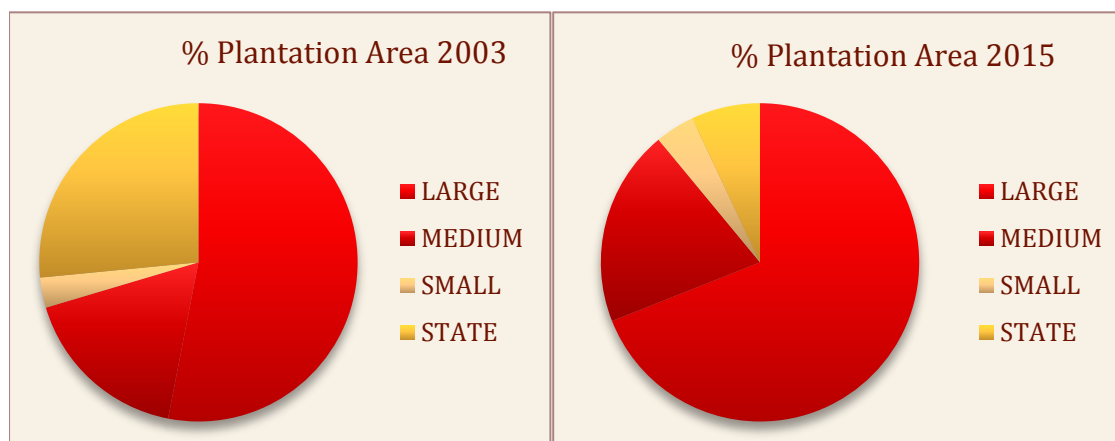


Figure 3.3: Trends in Plantation Ownership 2003-2015

Sources: 2003 data from Paper Manufacturing Association of South Africa (PAMSA) 2004 cited in Chamberlain *et al* (2005). 2015 data compiled in this study from FSC public summary reports, FSA 2013, company websites and primary sources.

The main change in plantation ownership over the past 10 to 15 years has been an increase in ownership share of large growers through privatisation of state forest plantation assets (Figure 3.3).

3.2.3 Large growers

As is evident in Table 3.1, the timber plantation industry in South Africa is dominated by large growers that, together with state owned entity KLF, own nearly 70% of the total plantation area, up from 53% in 2003. The majority of these companies are vertically integrated across their specialised value chains. Plantations are a means to secure supplies and manage the cost of timber and wood fibre needed for offsite and, in some cases, offshore manufacturing plants – mainly pulp and paper mills, sawmills and board mills. The emphasis is on producing high volumes of low cost timber through high productivity clonal monoculture, economies of scale, mechanisation, and other cost controlling measures.

A decade ago, ownership share amongst large growers was highly concentrated, with international pulp and paper giants Mondi and Sappi controlling 76% of large grower timber resources, according to PAMSA 2004 data cited in the Genesis report (Chamberlain *et al.*, 2005). By 2015, the combined Sappi and Mondi share dropped to 46% of large grower holdings. An associated trend has been an increase in the number of large forestry companies. De-concentration amongst the large corporate growers has been driven by a number of factors. Firstly, privatisation of state timber plantation assets increased the total plantation area under large grower control, and opened the door to new players. Secondly, Mondi has sold off around 50% of its plantation assets in South Africa since 2005. This too has opened the door to new players. Shifts in ownership amongst large grower companies reflect two trends: an increase in black shareholding driven by government's Broad Based Black Economic Empowerment (BBEEE) instruments, and an increase in foreign ownership driven by a global trend towards investment in timber and land assets (Howard and Madlala, 2015).

The value of global timberland investments held by Timber Investment Management Organisations (TIMOs) has grown exponentially over the past 10 years; to a value of United States dollars (USD)125bn (Howard and Madlala, 2015). The trend began in the

United States, driven by appetite for land and timber as an asset class amongst a range of North American and European investors, including large public and private organisations, pension funds and high net worth individuals. Concurrently, large forestry companies were seeking to release capital for investment in downstream processing capacity through sales of timberland. Brazil, Australia and New Zealand followed suit with significant growth in timberlands owned by TIMOs. TIMOs and other foreign investment companies are showing an interest in South African plantations, but currently ownership share is only 6%, according to data collected from primary sources during this study.

Although an estimated 40% of large grower plantations is subject to land claims lodged in 1996, the ownership share of these growers appears to have increased rather than declined over the past 10-15 years. This reflects the slow pace of settling claims, and the lack of information about the extent of restitution. Some individual companies, including Mondi, publicise information about the number and extent of claims and proportion that have been settled in annual reports and on their websites (see section 6.2 for more detail), but there is currently no information about forestry land restitution for the sector as a whole. The annual survey of timber industry statistics conducted for the South Africa Department of Agriculture, Forestry and Fisheries (DAFF) has not been modified to collect this information (South Africa Dept. of Agriculture Forestry and Fisheries, 2016b).

3.2.4 Independent commercial timber farmers

Commercial farmers produce close to 20% of total round wood in South Africa. The majority of timber farmers are located in KwaZulu-Natal and Mpumalanga provinces, and, to a lesser extent, in Limpopo, Eastern and Western Cape. Plantation size varies from under 100 hectares to more than 7000 hectares, with nearly 80% having 500 hectares or fewer (South Africa Dept. of Trade and Industry, 2009). As with many agricultural commodities, there is a trend towards consolidation of holdings, with the total number of farms declining and average size of property holdings increasing (Cousins, 2015). Black ownership is on the increase as a result of land restitution, share equity instruments, and outright purchase by black South Africans, but no reliable data are available on trends or total black ownership share in the commercial farming timber grower group.

Medium and small-scale growers are much more dependent on access to markets and getting a good price for their timber than vertically integrated large growers who make profits across the value chain. Timber marketing cooperatives have played a vital role in securing overseas markets and a share of value addition revenues for independent timber growers in South Africa (Box 1).

Box 1 NCT: case study in cooperative marketing

“The ongoing low availability and high cost of timber farming land, which continuously rises at rates exceeding inflation, is evidence of the inherent value that tree farming, supported by cooperative marketing, attracts in South Africa over the long-term”. Patrick Kime, NCT General Manager (NCT Forestry Co-operative, 2015).

Background

Services provided by marketing cooperatives, including NCT, have been the key to the success of independent timber growers and to the employment they provide. In future, they are likely to be pivotal to the success of emerging growers and new entrants, including land restitution beneficiaries and community-owned forestry enterprises in communal lands.

The NCT Forestry Co-operative Limited was established in 1949 by a group of timber farmers seeking to strengthen their bargaining power in the market (NCT Forestry Co-operative Limited, no date). The primary goal of the co-operative is to secure the highest timber prices for members. A key strategy in this regard has been to secure markets for woodchips in the East, initially in Japan and more recently in India and China. This has enabled members to secure overseas markets at premium prices, and to share in value addition through ownership of wood chipping plants. NCT owns BayFibre and Richard Bay Wood Chips in Richards Bay; and NCT Durban Woodchips in Durban. Woodchips from the mills are exported directly from Richards Bay and Durban harbours to overseas markets. NCT also owns and manages some 20 000 hectares of plantation land that generates additional revenue for members.

In addition to paying members the highest expected price for their timber upfront, price adjustment and bonus payments are distributed on an annual basis, thereby sharing the profits generated if woodchip prices are more favourable than expected and/or from a weakened Rand value against the USD. In 2015, NCT was able to pay members price increases, price enhancement and a bonus from profits generated in NCT timber farms. Total payout to members that year was R47 million. This included a bonus of R15/tonne delivered from NCT timber farm profits. Access to international markets provided by NCT has therefore been key to the viability and profitability of members' operations, enabling them to benefit from favourable exchange rates.

Markets

Historically, the majority of NCT timber has been exported to the East in the form of woodchips (75-80%). The remainder is sold domestically, supplying local pulp and board markets, and non-pulp wood markets. NCT has recently signed a long-term supply agreement with Sappi to supply increasing volumes of Eucalypt pulp wood to its pulp mills. The supply arrangement is based on achieving price parity with export markets.

Membership

There are currently some 1800 shareholder members, with a total plantation area of 311 000 hectares, or 21% of South Africa's plantation estate (Table 3.2). Only approximately half of the timber from this area is, however, marketed through the co-operative. Members comprise four groupings: large producers (multiple farms consolidated into single large forestry estates), medium-sized producers (family farms, often mixed farming operations), small-scale producers operating in communal land, and timber agents who harvest and transport timber on behalf of a large number of mainly small grower, non-shareholder, supplier members. Small grower timber sourced from full members and timber agents comprises a very significant 20-25% of total production (Table 3.2).

Table 3.2 Profile of NCT Shareholder Members

	Number	Area (ha)	Ave area	% Production
Large	381	200 000	525	
Medium	887	110 000	124	
Small	95	1000	10,5	20-25%
Timber agents	437	Unknown*		
Total	1800	311 000		

* NCT does not have records of the extent of the plantations where agents source their timber.

Small grower support

NCT has a significant small grower and timber agent member base, extending the services provided by the co-op to thousands of small growers. Grower members receive the full benefit of value addition and export markets, and non-member growers who supply via timber agents benefit from a guaranteed market and logistical support for harvesting and transporting their timber to the mills. Logistics are streamlined and managed to reduce costs and maximise efficiencies, extending benefits of economies of scale to members. The pooling of small volumes of timber unlocks markets that would otherwise only be accessible to suppliers with larger volumes. NCT also provides small growers with access to plant material and technical support.

Logistics are also provided via small harvesting contractors. NCT has helped to set up a network of trained chainsaw operators who walk to small grower plantations without road access. Transport companies with loading cranes go directly to growers with road access, and deposit timber at depots for pooling prior to long haul. All this provides improved access to markets and reduces the cost of harvesting, short haul, and long haul, through extending economies of scale to small producers. These services are particularly important when considering opportunities for employment generation through new afforestation and restitution of forestry land (section 6).

3.2.5 Small growers

Smallholder timber production increased rapidly in communal land areas in response to outgrower support packages provided by the large timber companies in the 1980s and '90s. The ready market for timber at pulp and paper mills and chipping plants in Richards Bay, Durban and Umkomaas led to further plantation growth amongst independent small growers. Timber companies and the government have also provided support for smallholder and community owned plantations in Limpopo, Eastern Cape and Mpumalanga. There is a severe lack of accurate and up to date information about these growers, as they operate mainly in the informal sector and no comprehensive studies have been carried out for the past several years. Available estimates, and these are more than 10 years old, suggest that there are between 22 000 (Forestry South Africa, 2010) and 31 500 (Chamberlain *et al.*, 2005) growers in communal land areas.

Productivity of growers in high potential areas close to pulp and paper mills has declined significantly in recent years and various initiatives have been launched to recapitalise existing growers in these areas. The challenges and opportunities for growth and employment amongst small growers are discussed in detail in section 6.6.

3.2 6 Community-based forestry enterprises

A fourth category of growers, not accounted for in sector statistics, is community-based forestry enterprises. Howard and Mdladla (2015) define these as 'a single ownership unit managed and controlled by a collective of community members such as a Trust or Company, with the ultimate ownership and/or control vested in the broader community represented by a CPA or Trust' (Howard and Madlala, 2015). The authors estimate there to be fewer than 20 such enterprises with an estimated area of less than 50 000 hectares, all located on land under communal tenure in KwaZulu-Natal and the Eastern Cape. One of the best known and most successful of these community-owned forestry businesses on communal land is that at Mabandla (Box 2).

There is also an increasing number of community-owned forestry businesses operated by land reform beneficiary trusts and Community Property Associations (CPAs), not included in the Howard and Mdladla study. It not possible to provide estimates for the extent, number, or success rates of these enterprises in the absence of reliable information. Since most settled restitution claims on forestry land have been on the basis of lease-back, cases of outright ownership of both land and timber are much fewer.

Box 2 The Mabandla case study

Plantation establishment

The Mabandla story began back in the mid-1990s, when the community leaders from uMzimkhulu, in southern KwaZulu-Natal, approached Mondi for support in establishing commercial forestry enterprises. Mabandla was one of three areas with significant afforestation potential that received support from Mondi for initial feasibility studies. When Mondi later withdrew, foresters Peter Nixon and Themba Radebe resigned to form their own consultancy company, Rural Forest Management (RFM), so they could continue to support community owned forestry ventures in the area (Ballantyne and Nixon, 2015).

Initial establishment of a 1350 hectare eucalyptus and pine sawlog plantation began in Mabandla in 2000 and was completed in 2006. Establishment costs were funded through pooling household land reform grants¹ supplemented by a loan from the Land and Agricultural Bank of South Africa (Land Bank). Mabandla households were invited to contribute their household grants to the venture. Those who contributed became beneficiaries of the Mabandla Community Trust. The Trust has a total of 2300 beneficiaries. A forestry company, with the Trust as 100% shareholder, was formed to run and manage the forestry enterprise. RFM has provided technical, financial and managerial support to the business since inception.

Harvesting of the first eucalyptus compartments began in 2008, and the plantation is now in full rotation with 90 hectares of eucalyptus timber harvested per year). The timber is sold to local pulp and pole markets and income is used to run the forestry business. Profits generated after costs are paid to the Community Trust in the form of dividends. Annual turnover of the forestry business is R12 million, and it provides 120 full-time jobs (Ballantyne and Nixon, 2015).

Livestock

In 2008 after the first harvest, the Trustees made a decision to re-invest all profits from forestry in establishing other businesses, with the aim of providing more jobs and additional income streams for the community (Baleni, 2016). Dividends are also used for further education and training of local youth and for adult literacy programmes. An opportunity for commercial beef

¹ At the time in 1999, the Department of Land Affairs (now the Department of Rural Development and Land Reform or DRDLR) made a Settlement and Land Acquisition Grant (SLAG Grant) available to the beneficiaries of Trusts.

production was identified on 500 hectares of fenced grazing land cleared of alien vegetation. Livestock owners in the community are invited to join the enterprise, receiving shares in proportion to the value of livestock contributed.

Ecotourism

Funding was received to establish a small nature reserve of 1500 hectares, bounded by two major rivers. The reserve provides an ideal location for a range of eco-tourism activities including fly fishing, kayaking, river rafting, abseiling, mountain biking, birding and hiking. An eco-tourism business plan was developed and a new company launched by the trust. The main activity so far has been to build log cabins, sited in areas of exceptional scenic beauty alongside the rivers and adjacent to natural forests. A team of young people from Mabandla have been trained to build the cabins, using pine thinnings from the Mabandla plantation.

Sawmill

Plans for a sawmill to process pine saw logs came to fruition in July 2016 when the Umgano Sawmill was officially opened. The sawmill relies on pine thinnings for the first three years until clear felling of mature saw-logs begins. Funding was received from the Vumelana Trust to develop the sawmill business plan. The sawmill itself was funded through investment from the Mabandla Community Trust, its development partners Umsonti¹ and a loan from the Industrial Development Corporation (IDC) (SA Forestry, 2014, 2016a). When fully operational, the sawmill will employ a further 17 people from the Mabandla community.

With the growing number of new businesses owned by the Mabandla Community Trust, an umbrella company, Umgano Development Company, was formed, and the subsidiary forestry, timber, and eco-adventures companies were rebranded with the Umgano name (Umgano is the name of a prominent mountain that dominates the Mabandla skyline). Several other local businesses are in the planning stage, including a training academy, a pole treatment plant and a large agro-processing business (Umsonti Community Forestry, 2013).

Education and Training

Funding from the timber sales has also been used for bursaries for local youth to study business and technical skills so that they can take over the running of the community business in due course. Zweli Baleni, the grandson of the visionary iNkhosi Sidoyi who started the forestry project in the 1990s, has returned to Mabandla after several years of tertiary and postgraduate studies and is now the CEO of Umgano DevCo. A further five young people from Mabandla are currently studying forestry and agriculture at tertiary level; another is on post graduate work placement. A training academy has recently been established at Mabandla. The Academy provides a range of short courses aimed at employees of the various companies, MDT Trustees and the local community. The Academy is also registered as an external training provider.

Timber production as a catalyst for local economic development

Timber production at Mabandla is serving as a catalyst for local development; providing a source of development finance as well as building institutional and governance capacity in the form of commercial business entities and community governance institutions. Turnover of Umgano DevCo subsidiaries is currently in the region of R17 million. The ventures currently employ a total of 145 people. Revenue and jobs are set to grow significantly with expansion of the existing businesses and with new enterprises coming on stream. The Agrico agro-processing venture alone is expected to generate more than 300 jobs and an annual profit of R 17m (Baleni, 2016).

¹ Umsonti is a non-profit organization established in 2011 to provide a coordinated vehicle for fund-raising and support for forestry and related rural enterprises. Umsonti builds on the successful work of Rural Forestry Development (RFD) and Rural Forest Management (RFM). Both RFM and RFD provided support to community-owned plantation enterprises in KwaZulu-Natal and the Eastern Cape since 2000. <http://www.umsonti.org.za>

3.3 Wood product value chains

3.3.1 Overview

Wood product industries in South Africa comprise four main processing value chains: pulp and paper, sawmilling and board production, mining timber, and poles. In addition, there are several other minor wood products including charcoal, firewood, and matchsticks. Plantation area share of these value chains is 56% pulp and paper, 37% sawmilling, 4% mining timber; 2 % poles, and 1% other (charcoal, firewood and a variety of other minor products). South Africa contributes 2% to global pulpwood production, and 0.5 % to global sawtimber production (Sawmilling South Africa, 2014).

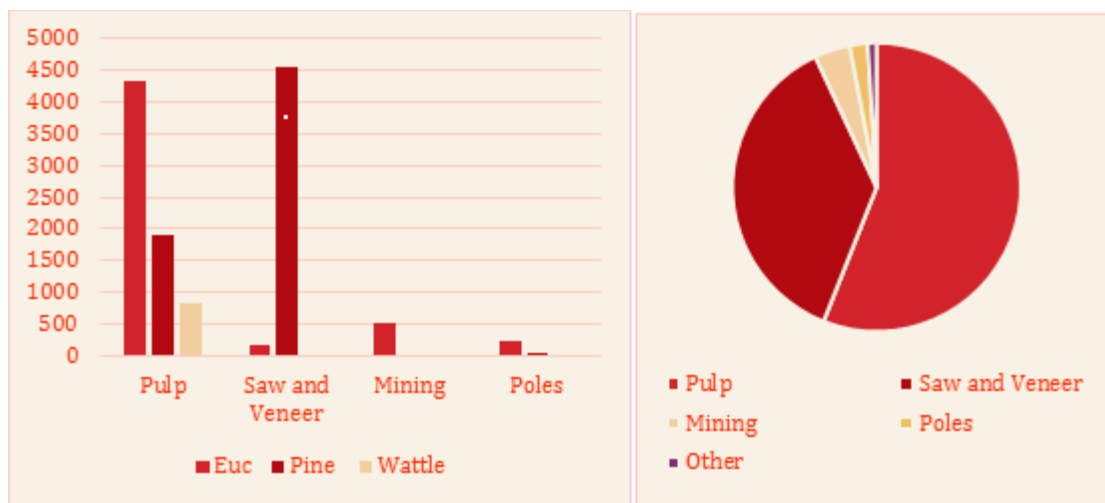


Figure 3.4: Plantation Area by Species and Product & Percentage Plantation Area by Product

Source: Howard, 2015

3.3.2 Pulp and paper

The pulp and paper industry in South Africa is dominated by multinational corporations Sappi and Mondi. High cost of capitalisation excludes all but the largest market players from this value chain, hence the evident ownership concentration. Both companies span the value chain from timber production, to primary processing (pulp), to secondary manufacturing (paper, packaging and tissue). Sappi owns four large pulp and paper mills in South Africa, and Mondi a further two. The industry has a strong export focus and operates in an open and globalised market. Nampak and Kimberly-Clark operate in the secondary processing arena, producing packaging and tissue products respectively. Internationally, Sappi is the leading producer of dissolving wood pulp (DWP), otherwise known as dissolving cellulose, a relatively new product now widely used in textiles, pharmaceuticals and food products. The development of DWP value chains is a major opportunity for economic growth and employment, discussed further in section 7.3.

In addition, South African timber growers export large volumes of hardwood chips to the East, an important niche market with a price premium and a high rate of growth. The export woodchip market is based on timber produced by independent small and medium growers. Export of woodchip to Japan begun in the 1970s, was an initiative taken by independent timber producers aimed at securing higher prices than those paid by domestic pulp producers (Chamberlain *et al.*, 2005). The success of cooperative marketing by independent growers is discussed in Box 1 above.

The pulp and paper industry runs a successful paper recycling programme that contributes to raw material supply, reduction of landfill, and employment (Chamberlain *et al.*, 2005). The volume of paper recycling continues to grow and has yet to be optimised, presenting additional opportunities for waste paper collectors. About 64% of recyclable paper is currently recovered (Paper Manufacturers Association of South Africa, 2015).

3.3.3 Sawmilling and board production

Sawmilling and production of boards is the second largest forest products industry after pulp and paper. There are some 76 formal sawmills and 10 board mills in the country. Unlike the pulp and paper industry, sawmilling is dominated by independent producers who collectively own 56% of the market share, with the remainder owned by six grower-processor corporates, including State Owned Enterprise (SOE), Komatiland Forestry (Stellenbosch University Dept. of Forest and Wood Science, 2010). Two forestry companies, PG Bison and World Hardwoods, specialise in board production, and there is a small number of board producer companies without their own plantations. Sawn timber is further processed into a wide variety of products grouped under the main headings of structural timber, industrial timber and furniture.

3.3.4 Mining timber

Although the use of timber in the mining sector has declined significantly over the past few decades, mining still consumes around 4% of total timber produced. The number of players and mining timber mills has also been declining, but there are still some 14 mills procuring timber from two large grower companies and numerous smaller producers (Howard, 2015), (Godsmark, 2013).

3.3.5 Poles

Pole production is a relatively small sub-sector of the forest industry consuming just over 2% of total round wood input to processors. Products include: treated poles, including large poles for transmission and telephone poles, and smaller poles for building, fencing and agricultural application; untreated poles used for the above, and smaller diameter poles used for droppers and laths.

The timber treatment industry is governed by regulatory requirements for compulsory registration and certification. These requirements are onerous, presenting a barrier to entry by smaller producers, and limiting market opportunities for non-compliant producers. Within the formal sector, six large scale operators dominate the transmission and telephone pole market. The remaining market share is shared amongst about 25 medium scale and about 65 small scale producers.

3.3.5 Charcoal

Charcoal production is a small sub-sector consuming only about 1.4% of the total roundwood intake (Chamberlain *et al.*, 2005). Raw material is mainly wattle and certain gum species, obtained mainly from wattle jungle and other alien plant clearing. Very little raw material is obtained from commercial plantations as viability of charcoal businesses is dependent on cheap timber.

The bulk of primary charcoal is produced by an estimated 160 small-scale producers. These small-scale producers provide unrefined charcoal to large industrial users and to the manufacturers of branded products for the barbeque market. In addition, there are four major producers of branded household charcoal (Chamberlain *et al.*, 2005). The balance of charcoal produced is used as a reduction agent in non-ferrous metal processing. Silicon smelters consume more than 90% of industrial charcoal produced.

4. EMPLOYMENT STATISTICS: FORESTRY AND WOOD PRODUCTS INDUSTRIES

Table 4.1 provides the best available estimates on the number of direct jobs in the forestry and forest products industry in South Africa. An effort was made during this research to trace the original source of figures provided in various industry reports and publications. The same figures tend to be repeatedly cited, some going back to an original source a decade or longer ago. In all instances, with the exception of original data collected for the large grower forestry companies in 2012 (Clarke, 2012), industry employment figures cited in the literature are based on estimates. The estimates are mainly derived from known production levels and established productivity figures. For example, of the estimated 30 000 jobs in sawmilling, 10 000 are in associated industry and 20 000 are sawmill jobs. The figure of 20 000 direct jobs is derived from the current capacity of sawmills in the country and an established ratio of number of jobs per cubic meter of sawn timber.

Table 4.1 Overall Industry Employment Statistics from the Literature

Sub-sector	Jobs	% Jobs	Original source
Forestry	95302	40	See Table 4.2
Pulp and paper mills	6000	3	Mondi, Sappi 2016
Woodchip exports	500	0	Genesis, 2005
Sawmilling	30000	13	FSA, 2013
Timber board	6000	3	Genesis, 2005
Mining timber	2200	1	FSA, 2011
Sawtimber manufacturing	56000	24	SALMA, 2001
Treated poles	5000	2	Genesis, 2005
Charcoal	5500	2	Genesis, 2005
Waste paper	30000	13	PRASA, 2016
TOTAL	236502		

Table 4.2 Detailed Employment Statistics for Forestry Plantations

Ownership category	# of entities	Area (ha)	Number of jobs			% Out-source
			Direct	Contractor	Total	
Large growers: private land	13	641497	2983	25059	28042	89%
Large growers: leasing state land	4	131464	1608	2279	3887	59%
Large grower - KLF	1	122578	2065	1935	4000	48%
Large Total		895539	6656	29273	35929	81%
Medium Growers - commercial farmers	1300	196543	10534	5809	16343	36%
Small growers on communal land	nd	45100	40000		40000	
State - DAFF		83544	3030	Nd	3030	
Total		1277245			95302	

Sources: Clarke (2012) updated during this research using FSC Public Summary Reports and telephone interviews. Figures in italics for medium and small grower plantations are outdated estimates (FSA 2011) that remain the official statistics for the industry. Records of timber deliveries to the main processing plants in 2016 indicate a combined small grower plantation area of at least 110 000 hectares (Dobson, 2017), suggesting these estimates are inaccurate.

5. EMPLOYMENT VARIABLES AND TRENDS IN FORESTRY

5.1 Labour outsourcing, impact on jobs, wages and working conditions

The past decades have seen a major restructuring of employment practices of timber growers, particularly amongst the large corporations. In common with many other sectors in the South African economy, including agriculture, there has been a significant shift away from direct employment to labour outsourcing (Clarke and Isaacs, 2005). From the 1990s up until mid-2000s, large forestry companies retrenched the majority of their permanent workers. Sappi Forests led the way, outsourcing all its forestry operational work (with the exception of nurseries), in the mid-1990s. Mondi Forests followed suit, retrenching more than ten thousand workers between 1997 and 2002, comprising 93% of the workforce (Clarke, 2011).

Labour outsourcing was a response to the perceived risks associated with a more stringent legislative environment, and other factors, including South Africa's re-entry into the global economy and being subject to stronger competition (Clarke and Isaacs, 2005). The two largest forestry companies outsourced 90-100% of their labour, and medium sized and smaller large grower companies largely followed suit, although many retained a portion of directly employed workers. With the exception of SiyaQhubeka Forests (SQF), the companies that took over the state-owned plantations have retained a

core group of direct labour, but also make use of contractors. The single remaining SOE, Komatiland Forests, similarly employs a mix of directly employed workers and workers employed by contractors. Overall, across all large growers, 82% of workers were indirectly employed by contractors (Clarke, 2012). The sudden transition from direct to indirect employment precipitated a labour crisis in the industry, as evidenced by soaring accident and injury statistics and plummeting productivity levels (Morkel, 2005; Fakisandla Consulting, 2005 and 2006). Turnover amongst contracting businesses was extremely high; a combination of unrealistic payment rates set by the companies and lack of business acumen and experience in the start-up contracting businesses, many of them run by former foresters. This in turn had serious consequences for both business owners, many of whom were bankrupted in mid to late career, and forestry workers, who lost their jobs (Clarke and Isaacs, 2005). The impacts of outsourcing on workers' wages and working conditions were immediate and dramatic. In the first place, close to thirty thousand permanent jobs were lost and not all workers regained employment with contractors. Those who did were employed at half or even one third their previous wage rate on an informal or short-term basis. The impact on workers was further magnified by the loss of benefits associated with permanent employment, including access to company run clinics, subsidised schooling, and pension funds (Clarke and Isaacs, 2005).

The negative impacts of labour outsourcing outlined here have led to wide ranging reforms in company-contractor relations, including more stringent oversight of contractor operations by forestry companies (Clarke, 2011). The introduction of a Sectoral Determination for forestry workers in 2006 played an important role in setting legal minimum working conditions and wages for forestry workers (South Africa Dept. of Labour, 2006). FSC certification also played a role in bringing about stricter legal compliance monitoring of contractors by companies (Clarke, 2011). Under these reforms, the forestry contracting environment began to stabilise and formalise and this, in turn, has led to a degree of "re-formalisation" in forestry employment. Some large contractors now offer permanent employment, pension plans, education bursaries and other benefits to their workers. Some have unionised workplaces and engage in collective bargaining. Overall compliance with minimum wage legislation is high amongst forestry contractors, and the 2012 52% increase in minimum wages for farm and forestry workers brought wage levels closer to a living wage than previously (Clarke, 2013).

A National Minimum Wage (NMW) Agreement was signed by the parties to the Nedlac NMW negotiation process in February 2017 (National Economic Development and Labour Council, 2017). Agreement was reached to introduce a NMW of R3500 per month, or R20/hour by 1 May 2018. This amounts to a 21% increase in the minimum wage for forestry workers (SD 12 Gazetted rate for 1 April 2016- 1 May 2017 R14.25 hour). The agreement makes provision, however, for a 24-month phasing in of the NMW for agriculture and forestry workers. Although Forestry South Africa, along with AgriSA, campaigned vigorously for forestry and farm workers to be exempt from a national minimum wage, the recently signed NMW agreement has received cautious welcome for providing clarity to employers in their sectors (Mabuza, 2017).

In combination, the sectoral minimum wage, legislative reforms introduced to protect vulnerable workers, along with improved compliance monitoring effected by the State, the companies themselves, and through FSC certification, have countered some of the negative impacts of labour outsourcing on forestry workers' wages and working conditions. With the imminent introduction of the NMW, wages in the sector will be further strengthened.

Introduction of minimum wages and other legislative protections, however, carry an associated risk of accelerating job losses, as has been documented in the agricultural sector (Bhorat, Kanbur and Stanwix, 2012; Hall, 2014). In forestry, there is evidence that minimum wage levels and more stringent labour law are part drivers of increased mechanisation and associated job losses. These and other drivers of the sector wide mechanisation trend are discussed further in the following section.

5.2 Mechanisation

Since the introduction of chainsaws in the 1950s, there has been a steady progression within the industry towards increased mechanisation of harvesting, extraction and loading of timber (Längin, Oberholzer and Ackerman, 2007). Some industry specialists argue that mechanisation is an inevitable process of modernisation, benefiting productivity levels and phasing out dangerous, tedious and debilitating jobs (Längin, Oberholzer and Ackerman, 2007; SA Forestry, 2013). Mondi Forests, in fact, refers to its recent mechanisation drive as 'modernisation', driven mainly a mandate from its Board to phase out all physically demanding jobs with a high risk of long term injury and disability (Morkel, 2011). Reputational risk and the impact that fatalities and injuries can have on share price may be the key driver of these Board concerns¹. The company adopted a policy to phase out all jobs that carry a risk of accidents and injury. These include harvesting with chainsaws (high risk of fatal accidents), bark stripping (high risk of long term injury from bending) and timber stacking (high risk of injury from excessive, repetitive loads). Timber harvesting machines replace all these jobs.

Volume of production can also be increased through use of machines, an important consideration when supplying large pulp and paper mills that have to run at full capacity for 24 hours per day, seven days a week. Perceived risks associated with labour have also been amongst the key drivers of mechanisation: rising cost of labour, stringent labour law, declining productivity, high worker turnover and absenteeism, and labour shortage in some areas (Morkel, 2011).

Since the early to mid-2000s, large grower companies throughout South Africa have mechanised both silviculture and harvesting operations to a greater or lesser extent, within the limits imposed by terrain. Sappi has mechanised 70-75% of its harvesting operations over the past decade. Mechanisation of silvicultural operations is now under way (SA Forestry, 2013). Mondi has been particularly aggressive in its approach to introducing mechanised operations amongst its contractors, initially amongst harvesting contractors (2002-2012), and more recently (2012-14) amongst silviculture contractors. A similarly aggressive policy towards mechanisation was followed by SQF in which Mondi is the majority shareholder.

Between 2001, when the plantations were transferred from the State to SQF and 2016, a total of 424 (43%) of jobs were lost; with mechanisation likely to account for all or the majority of these job losses. Job losses on Mondi plantations are more difficult to calculate because the company has sold off close to half of its holdings since 2002 (plantation area declined from 259 807 hectares in 2002 to 152 123 hectares in 2015). During this period, employment on a per hectare basis has declined from 0.07 jobs/hectare to 0.05 jobs/hectare, suggesting the loss of just over 3000 jobs on its current holdings². It is interesting to note, however, that even after mechanisation,

¹ According to an industry specialist interviewed

² Mondi was unwilling to provide actual figures on mechanisation job losses for this research, directing attention to employment creation efforts the company is sponsoring through its enterprise development subsidiary, Mondi

Mondi's jobs per hectare ratio is still 0,01 above the large grower average. A possible explanation for this is that Mondi's holdings include a high proportion of open area, and extra labour is engaged to clear alien invasive vegetation in these areas¹.

Based on figures supplied by caterers providing daily meals to Mondi's contractor workers in the Ntonjaneni and Mfolozi areas of northern KwaZulu-Natal, areas most affected by mechanisation, 65% of jobs have been lost since 2008 as result of mechanisation of harvesting and silviculture operations. One of the largest silviculture contractors in that area, interviewed in the course of this research, retrenched 60 full time employees out of a total staff of 196, and is expected to retrench a further 32 workers in the course of further mechanisation (amounting to 46.9% job loss).

Although incomplete, these figures give a sense of the impact of mechanisation on the numbers of jobs in large grower plantations, with the highest impact being in northern KwaZulu-Natal where bio-physical conditions are ideal for mechanised harvesting. Given the decrease in total extent of large grower timber plantations, and job losses as a result of mechanisation, there is clearly little opportunity for employment creation amongst the established large timber growers.

Recent job losses as a result of mechanisation are, however, offset to some degree through support provided to local enterprise development in communities in areas surrounding plantations. Much of this support is driven through the Broad Based Black Economic Empowerment (BBBEE) scorecard, specifically targets set for spend on the Enterprise and Supplier Development element of the scorecard.

Mondi established Mondi Zimele as an independent subsidiary in 2007, initially with the aim of promoting black economic empowerment and supporting small and medium contractor business development within Mondi value chains. The focus was later expanded to include support to independent growers and to other non-forestry businesses. Mondi Zimele now has three target groups for business support: forestry and mill contractors, small business and job creation within communities surrounding Mondi plantations, and private and community timber growers within areas in the catchment of Mondi paper mills. The Mondi Zimele model is based on three pillars of support: funding (providing equity, discounted loans and asset finance), business development support (providing technical, financial, managerial and administrative advice and support), and assistance with access to markets. According to the latest available information, Mondi Zimele has provided support to more than 80 small businesses that, in turn, have created more than 4200 jobs (Mondi Zimele, 2013). Without an independent evaluation of these programmes, their full impact and sustainability cannot be assessed.

Although employment statistics are not readily available, it can be assumed that employment by independent commercial timber growers has been less affected by mechanisation than among the large growers. Plantation areas are usually not large enough to justify investment in expensive machinery. This constraint is partly offset through the use of contractors who harvest across multiple landholdings, but full mechanisation is only possible where the terrain allows. Timber plantations on the flat coastal plains of Northern KZN, which are highly suitable for mechanized operations, are largely in the hands of large growers.

Zimele (see below for more information on Mondi Zimele programmes and their contribution to creating employment).

¹ Viv McMenamin, email communication

According to informants interviewed in the course of this study, however, most timber farmers in the midlands of KwaZulu-Natal are cutting back on labour to the extent possible, through a variety of labour saving measures, including, but not limited to, mechanisation. Timber producers are competing internationally, and there is constant pressure on producers to be more efficient and to lower their prices. These trends contribute to mechanisation and job losses. The timber farmers interviewed for this research were selected because, counter to this general trend, they have elected to maintain labour intensive operations and create additional on-farm jobs where possible. This case study is presented in Box 3.

Box 3 Greytown timber farmers: case study in labour intensive production

Background

The following case study is based on an interview with the managers of Hill Forestry and Bracken Timbers. Online sources were used for additional information and fact checking (Bracken Timbers, no date; NCT Forestry Co-operative, 2008; SA Forestry, 2010a, 2010b)). The views expressed here are those of the managers interviewed.

Hill Forestry and Bracken Timbers are award winning family-owned timber and agriculture farms in the Greytown area in the Midlands region of KwaZulu-Natal. Whilst the majority of other land owners in the Greytown area are responding to the perceived socio-political risks of continued production by cutting back on employment and on-farm investment and growing short rotation crops, Hill Forestry and Bracken Timbers have opted for a different approach. They believe in pro-actively seeking to reduce risk through building relationships with the local community, and spreading the benefits of their farming and forestry operations as widely as possible. The policies of both companies are geared to maximizing employment through diversifying production, onsite value addition and use of labour intensive methods in all operations.

Hill Forestry comprises three farms of 1 377 hectares in extent; 1 110 hectares of commercial timber, with the remaining 267 hectares made up of grassland, riparian areas and infrastructure. Hill Forestry has diversified its forestry operations to produce a wide range of products, thus spreading the risks associated with fluctuating prices and demand. *Eucalyptus dunnii* is grown for poles and pulp-wood; wattle for bark, pulp-wood and charcoal, and pine for structural and industrial saw-logs, and pulp-wood. Additional and complementary products include cattle, thatch-grass, building poles, fencing material, honey and a small charcoal plant. Grasslands and riparian areas are managed for conservation purposes. An extensive valley clearing programme has been implemented to remove all commercial timber from riparian areas and numerous examples of rehabilitated valleys are visible. A rotational burning system is implemented in all areas that have significant grass cover. A dedicated crew are employed to control the spread of invasive plant species. Hill Forestry employs 140 permanent workers, 50 of whom live on the farm and the remaining 90 in a neighbouring communal area. The farm provides a crèche, primary schooling, transport, incentive schemes and an innovative HIV/AIDS support programme for workers.

Bracken Timbers holdings are made up of 8100 hectares of pine and wattle plantations, and 360 hectares of agricultural land. A large sawmill adds value to sawlogs produced on the farm, and purchases additional sawlogs from neighbouring farmers. Belts of wattle are grown between pine compartments and supply pulp wood and bark as well as feedstock for charcoal production on-farm. Wattle has been retained specifically to create additional jobs and diversify income sources. The farm also produces a range of agricultural crops, including maize, soya beans, and grapes. Bracken Timbers employs 1510 workers on a full-time basis across all its operations.

Labour-intensive production strategies

Hill Forestry and Bracken Timbers make use of the following methods to spread risk, maximise income, and increase jobs:

Avoiding mechanisation: within constraints imposed by health and safety requirements, work is done manually in preference to making use of machines;

Creating businesses within the value chain: Bracken Timbers' sawmill and charcoal operations provide an additional 360 jobs alongside the 1150 jobs in forestry and farming operations. Adding value is also a way to increase the turnover from the same area of production, increasing revenue without expanding land holdings;

Diversifying production: multiple resource utilisation is another means to increase employment. In addition to timber, Hill Forestry produces beef, thatch-grass, building poles, fencing material, and honey from forestry compartments and adjacent open areas. These operations provide additional jobs and income streams;

Maximising product value: labour intensive operations are used to increase the value of the product where possible. To produce top-grade saw timber, pine compartments are grown on a 30-year rotation, making use of labour intensive methods of thinning and pruning. The price of high-grade S7 timber justifies the additional cost of production;

Conversion to labour intensive crops: through converting areas of the farm previously under sugar cane to pine production, Hill Forestry were able to double job numbers.

Labour management and recruitment challenges

The managers of both operations consider good labour relations to be the key to successful labour-intensive operations. The decision to mechanise and reduce labour is, in these managers' view, a way of 'copping out' of the challenges of managing labour. Hill Forestry and Bracken Timbers both intentionally maximise employment opportunities in their operations and invest in good labour relations through effective, transparent and trustworthy staff management systems and practices as a means to reduce labour-related risk.

Local farmers report significant challenges in sourcing and retaining good staff. Managers at these two companies both report that it has become especially difficult to recruit young staff. The poor standard of education and the low level of skills amongst school leavers is a key constraint, in their view. They also attribute the lack of interest in forestry and farm work amongst young people to social grants and a lack of work ethic. Difficulties with labour recruitment and undesirability of farm and forestry work amongst the youth has been quite widely documented and linked to poor wages and working conditions in relation to physical demands and discomfort levels associated with such (Clarke and Isaacs, 2005; Fakisandla Consulting, 2005, 2006; Visser and Ferrer, 2015).

5.3 Employment intensity variables

Employment practices amongst categories of timber growers are widely variable and dynamic. Large growers own 70% of timber plantations in the country and, therefore, provide most timber plantation jobs. The past two decades have seen major shifts in large growers' employment practices and declining employment as a result of labour outsourcing and mechanisation. These trends are, however, less evident amongst medium and small-scale producers, and some (see Box 3) proactively seek to maximise employment opportunities as a means to manage risk and increase overall profitability and sustainability of their enterprises.

According to data supplied in FSC public summary reports the average figure for jobs per hectare across all large growers is 0,04 (Table 5.1). On a company basis, the figure varies from 0,02 to 0,06, with over half of all companies at 0,03. The Bureau for Food

and Agricultural Policy (BFAP) places agricultural commodities on a labour intensiveness spectrum between 0,01 (non-labour intensive) and 1,3 (high labour intensive). Forestry is on the lower end of this spectrum, but higher than extensive grain production and livestock farming (South Africa National Planning Commission, 2011).

Table 5.1 Employment intensity amongst different growers (2015 /2016 data)

	Area	Total jobs	Jobs/ hectare
Large growers	887445	34995	0,04
Medium growers			
NCT Group Scheme	75550	7007	0,09
Hill Forestry	1100	140	0,13
Bracken Timbers	8460	1510	0,18
Community-based growers			
Mabandla	1350	145	0,11
Small Growers			0,37

Sources: Large growers & NCT: FSC Public Summary Reports; Hill Forestry; Bracken Timbers; Mabandla - interviews with growers during this research; Small growers: Estimate - figure cited in Genesis Report (Chamberlain, 2005)

Medium growers (commercial timber farmers) own approximately 20% of the timber plantation area in the country. Labour practices vary from farm to farm, and there is little information available about this group of growers. Some timber farmers, such as Hill Forestry and Bracken Timbers (Box 3) have opted to maximise employment opportunities as a risk reduction strategy, whereas others see labour as a risk and cut back on employment as far as possible. Table 5.1 draws on case study data from this research, and average jobs per hectare of growers who are members of the NCT FSC Group Scheme¹. As the Hill Forestry and Bracken Timbers case study shows, more jobs can be created through using labour intensive methods, choice of timber species, multiple resource utilisation and on-farm value addition. The higher than average jobs per hectare of the 72 NCT FSC Group Scheme members may reflect that such practices are more widespread amongst commercial timber growers. The job numbers in Table 5.1 include all jobs on the farm, not just forestry workers, reflecting the potential that exists to maximise employment through diversification and onsite value addition.

Although community-based growers own a very small proportion of the national timber estate, jobs and livelihood opportunities provided are extremely important in these impoverished and underdeveloped areas. There, unlike in the rest of the country, there is still considerable opportunity to expand timber plantations and to rehabilitate existing plantation assets.

The higher than average employment figures at Mabandla (see Box 2 case study) tells a story similar to that of Bracken Timbers and Hill Forestry in Greytown. The forestry

¹ NCT runs an FSC Group Scheme for its members. There are currently 72 members. Group schemes are means to reduce cost of certification by sharing administrative and compliance costs amongst the members.

plantation was the first business to be established at Mabandla. Revenue from timber sales was then used by the community trust to start several other ventures. A nature reserve was declared, and a number of rangers were employed. A sawmill operation was opened in 2016. These businesses create additional employment from forestry, through making use of open areas and adding value to the harvested timber. The Mabandla employment figures in the table represent current sawmill and eco-tourism jobs. Many more jobs are in the pipeline, all leveraged through the initial investment in timber.

The small grower estimate of 0,37 jobs per hectare is the figure used in the 2005 Genesis Report. This was derived from the national average for small grower plantation size of two hectares (doubled to four hectares to be conservative), plus one helper or worker per eight hectares, a figure also derived from industry information on small growers. The figure of 0,37 jobs per hectare reflects a potential contribution to rural livelihoods rather than a job *per se*. Both the small grower and his or her helpers, often family members, derive additional income from timber growing. Although not equivalent to full time employment, this source of income may be crucially important to timber-growing households and those they employ. Employment opportunities and trends amongst small growers are discussed further in section 6.5.

6. OPPORTUNITIES FOR GROWTH AND EMPLOYMENT: EXPANDING, RESTRUCTURING AND RECAPITALISING TIMBER PRODUCTION

6.1 Overview

Expansion of timber plantations is constrained in South Africa primarily by biophysical limitations and legislation controlling water use. All but a few catchments suitable for afforestation are already maximally afforested and no further water use licences may be issued.

Amongst established growers, there is scope for more intensive operations, based on the variation evident amongst growers. The Greytown timber farmers case study (Box 3) demonstrates how jobs can be increased from 0,03 to as much as 0,18 per hectare. Job losses through mechanisation can to some extent be offset by employing additional workers in open area management and investing in enterprise development in neighbouring communities as Mondi has demonstrated. The overall analysis of industry trends, however, suggests static to declining employment opportunities amongst established growers, given the prevailing trend towards mechanisation and job shedding amongst large and medium growers alike.

Opportunities for growth and employment in forestry do exist, however, outside of the established grower sector. These lie mainly in restructuring and revitalisation of existing timberlands as well as expansion of plantations in communal lands. An underlying condition for realising these opportunities is a revitalisation of government's land reform programme. The following broad areas of opportunity exist, each discussed in more detail in the following sections.

Restitution and redistribution of large-scale monoculture plantation land offers opportunity for more diversified production and onsite processing enterprises, based on, but not restricted to, timber, which could be more labour intensive than is possible under the current lease back model adopted by the vertically integrated grower-processor corporations. These opportunities are explored in more detail in section 6.2.

Restitution of rights to state forest plantations, and in other cases, formal recognition of customary rights, are necessary preconditions for payment of lease fees collected by government on behalf of communities with underlying land rights. These funds could, if

equitably and justly distributed, provide much needed seed finance for local economic development including financing establishment of community-owned plantations by rights holders on communal land abutting these plantations. Further detail for the leased state forest plantations, land rights and lease fees is provided in section 6.3.

The third pillar of the land reform programme, tenure reform, along with associated support mechanisms, could unlock considerably more job opportunities in communal lands where there is still suitable land in catchments not yet closed to afforestation. In these areas, there is considerable potential to expand plantations as well as restructure and recapitalise existing state plantation and small grower timber resources. Employment opportunities associated with forestry development, as well as the key requirements to enable swifter progress in achieving forestry development goals in communal areas, are explored in sections 6.4 to 6.6.

Recommendations for these are presented in section 8, drawing on the strengths of the established industry, and findings of Parliament's High Level Panel Report (South Africa High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change, 2017).

6.2 Land restitution and redistribution of private timberlands

An estimated 40% of land held by private forestry companies and 70% of state owned plantations are subject to land claims submitted during the first window of opportunity ending in 1998. Sector-specific statistics for the settlement of claims are not available, but it can be inferred from overall assessments of the land restitution programme and from forestry company reports, that progress in settling these claims and transferring ownership to claimants has been slow (South Africa High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change, 2017). Mondi Forests has been particularly active in engaging government in settling claims on its land but by the end of 2016, only one third of the 63 claims had been settled, altogether comprising 37,000 hectares out of a total claimed area of 114,361 hectares (Mondi Group, 2016). The majority of claims have been settled on the basis of lease-back agreements.

The leaseback model was developed because there were insufficient funds to purchase the standing timber, worth up to four times the value of the land itself. Hence in these cases, land rights were restored, but the forestry company still owned the timber. A phasing out of the lease was envisaged in the restitution model agreed to by the Minister responsible for land reform and the commercial forestry industry in 2009. Leaseback settlement agreements included various capacity-building measures for beneficiary communities, including forestry contractor development (contracting companies owned by beneficiaries are given preferential access to work in timber plantations on their land), as well as grants for further education and training. In practice, however, full takeover of the forestry business by the beneficiaries has been difficult to achieve because the standing timber continues to be owned by the forestry company and there is no clear mechanism built in, or funds available, for beneficiaries to purchase the standing timber on their land.

The slow pace of settling claims and the restrictions imposed by the leaseback model limit the impact of restitution on employment opportunities for beneficiaries. Based on the Mondi figures, likely to exceed the average, less than a third of the 40% of land claimed has been restored to claimants. Of that, the majority remain encumbered with leases as the new owners lack the capital and expertise to purchase and run existing timber businesses on their land. Employment opportunities for beneficiary communities are restricted to forestry contracting operations that in turn must conform to industry

standards aimed at maximising productivity whilst minimising labour costs. The land remains part of an overall large scale, mechanised mono-culture timber operation with little opportunity to use more labour-intensive ways of working and diversify operations on the land.

Could more employment be created by accelerating settlement of claims and providing the necessary finance and support to enable beneficiary communities to gain full ownership and control of production on their land? The following estimates are based on current average large grower employment intensity figure of 0,04 jobs per hectare and the average achieved by Greytown farmers and at Mabandla of 0,14 jobs/hectare (see Table 5.1).

Table 6.1 Potential Job Opportunities from Forestry Land Restitution

Scenario	Plantation area	Ave Jobs/ha	#Jobs
Large Growers - current	887 445	0,04	35 498
40% land restitution -leaseback	354 978	0,04	14 199
40% land restitution -full ownership	354 978	0,14	49 697
Potential for extra jobs through restitution			35 498

Current leaseback models could, as initially intended, form a bridge from current corporate owned monoculture to smaller scale more diversified and onsite value-added operations as exemplified by the Greytown farmers and at Mabandla. The existing models for settlement of claims on forestry land also make provision for outright purchase and transfer of both land and timber, and some such settlements have been reached. Aside from public relations information put out by forestry companies, there is little independent information and analysis on how restitution cases have fared. A full review of restitution on privately owned forestry land is needed to assess outcomes, review the models, identify best practices, and make recommendations for improved policy and practice.

6.3 State forest plantations: Paying lease fees from Category A plantations to local rights holders

Land claims lodged to state owned plantations are even more encumbered by current policy than those on privately owned timberlands. This is in part a reflection of the complex history of these assets and the policies of the apartheid state. Colonial and apartheid governments invested in establishing plantations of mainly long rotation

softwood saw timber throughout the country, including in former Bantustan areas of Transkei, Ciskei and KwaZulu. The former Bantustan plantation assets reverted to DWAF in 1994. State plantations within the boundaries of the former RSA were transferred to parastatal SAFCOL just prior to 1994.

The new democratic government embarked on a programme to restructure both SAFCOL and DAFF state plantation assets in the late 1990s, in keeping with 1996 Forestry White Paper and international trends at the time (South Africa Ministry of Water Affairs and Forestry, 1997). The assets were classified into three groups: A, B and C plantation packages. Category A comprised five packages of the most commercially

viable of the former homeland plantations, combined with adjacent SAFCOL plantations. Phase 1 of the restructuring process was to privatise the Category A plantation packages, through leasing them to privately owned forestry companies on a competitive bid basis. Aside from the largest Komatiland package, which was retained as a SOE, leases for all packages were successfully concluded by 2005.

Table 6.2 Leased State Forest Plantation Packages

Package/ SPV name	Location	Area (ha)	Majority share	Date of transfer
Singisi Forest Products (SFP)	Eastern Cape –N	57 967	Hans Merensky	August 2001
Amathole Forestry Company(AFC)	Eastern Cape –S	14 765	Rance Timbers	April, 2005
Mountains to Oceans(MTO)	Western & Eastern Cape	72 127	Cape Timber Resources	March 2005
Siyaqhubeka Forests (SQF)	KwaZulu-Natal	22 700	Mondi	October 2001
Komatiland Forests(KLF)	Mpumalanga, Limpopo	127 700	state owned	Retained as SOE
Total area		295 259		

At the time of transfer, there were significant land claims (about 70% of land was claimed), and other unresolved tenure issues on these parcels of state forest land. Government parties agreed that it would not be possible to resolve these rights and claims prior to transfer of the commercial assets to private companies. It was agreed by an inter-Ministerial committee that the land would remain state property until ownership is restored to successful land claimants or communities whose customary rights were affirmed through tenure reform. The land would therefore be leased and not sold to the successful bidders, who would purchase the standing timber, but not the land.

All lease payments in respect of land on which there are customary tenure rights or land claims were to be deposited in a trust account until the claims and rights were confirmed through government's restitution and tenure reform programmes. This money would then be paid over, together with any interest accrued, to the rights holders in proportion to the area of land restored. In the case of successful claims, claimants would be given the choice between restoration of the actual forestland, or alternative compensation. If they chose restoration, the government would seek a condition that the land remain subject to the lease and that government would act as agent for the new landowner in administering the lease. The Land Claims Commission gave assurances that settlement of claims on forestry land would be prioritised.

Two test cases aimed at securing payment of lease fees for local communities with underlying land rights were supported as part of an Eastern Cape forestry development initiative in 2007-2008. The cases were selected on that basis of clearly defined

customary rights to portions of adjacent leased plantations ¹. At the time, the accumulated rental income for the Singisi lease alone was estimated at more than R45 million, most of which was due to communities with customary rights protected in terms of the Interim Protection of Informal Land Rights Act (IPILRA). Both test case communities proposed to use the money for enterprise development and employment creation. One of the test cases, the Cata CPA, was at the time seeking finance to expand its own commercial forestry plantation adjacent to the leased state plantation on their land.

Despite the specialist support mobilised through the project, both communities were unable to secure their lease fees. The final project report noted the lack of political will and identified the most critical stumbling blocks to payment of lease fees to rightful beneficiary communities. Principal amongst these was the lack of cooperation from provincial and national land reform officials in confirming community land rights. In addition, it emerged a decision had been taken to pay out all lease fees in a lump sum on a per package basis, rather than progressively on a case by case basis. This required all land claims and IPILRA rights to the entire package to be investigated and confirmed before lease money could be paid out (Teba Development, 2008).

It is now 17 years since the first leases were signed, and 13 since the signing of the Mountains to Oceans Forestry (MTO) and Amathole Forestry Company (AFC) leases. Slow progress has been made in settling claims, and none of the informal rights held in terms of IPILRA have been confirmed. In 2011, scheduled to coincide with the build-up to local government elections, symbolic cheques representing the lease money owed to rights holders were presented to traditional authorities living in proximity to the Singisi and Siyaqhubeka leased plantations by the Minister of Agriculture, Forestry and Fisheries. These high-level events were attended by the President and got significant press coverage. According to unverified reports from the ground, the Singisi money was never actually deposited in beneficiary accounts, and in the case of Siyaqhubeka, most of it has gone missing, leading to lethal conflict within the local community. No further payments have been made to these or other groups of claimants. In the meantime, the rental income continues to accrue in the Trust Fund, claims remain unsettled, and conflict between claimants and the leaseholders continues to escalate. If equitably and justly distributed and managed, these funds could provide much needed seed finance for local economic development and job creation. Lack of access to grant and low interest finance is one of the key constraints to local economic development in impoverished rural areas. Government's failure to settle claims, verify informal land rights and make provision for just and equitable distribution and management of these funds stands in the way of realising these opportunities. It is difficult to estimate how many jobs and livelihood opportunities could potentially be unlocked through access to the funds without a full investigation into these trust funds and their disbursement.

6.4. State forest plantations: recapitalisation and transfer of Category B & C plantations to local rights holders

In addition to Category A plantations discussed above, are the remainder of the state forest plantations, the so-called Category B and C plantations. These plantations are all located within former Bantustans and comprise a total plantable area of 65 587 hectares

¹ Test cases for payment of lease fees formed part of the project 'Forestry Development Planning for the Eastern Cape' carried out by Teba Development with funding from Conmark Trust. The two test cases were with rights holders to Cata and Insizwa plantations (Teba Development, 2008).

(Keet, 2009). Two-thirds are in the Eastern Cape: a total of 12 Category B estates covering a total plantable area of 19 569ha, and 83 Category C plantations covering a total plantable area of 10 834ha (LHA, 2006).

The Category B (and many of the Category C) plantations present a valuable opportunity for job creation, community development and economic growth in the surrounding areas, amongst the most economically stagnant and impoverished in the country. Many of the category B plantations in the Eastern Cape are located in areas of high production potential, but have been mismanaged for so long that productivity has drastically declined (Keet, 2009). Instead of generating much needed revenue and jobs for local communities, the plantations are an unnecessary drain on the national fiscus.

As these plantations are located in communal areas of high forestry potential, and underlying land rights were in fact never alienated¹, they provide ideal “anchor” resources for new afforestation initiatives by rights holders in surrounding areas. The Genesis Report of 2005, for example, considers the combined potential of rehabilitation and transfer of the DAFF plantations and new afforestation in the Eastern Cape (see Table 6.1 in section 6.5). Similarly, the opportunity to link the transfer of selected Category B and C plantations to new afforestation to create larger and more commercially viable plantations forms part of the 2009 Eastern Cape Forestry Development Plan (Accelerated and Shared Growth Initiative for South Africa, 2009). Estimates of employment opportunities associated with these plantations are therefore considered along with those for new afforestation in section 6.5.

A flagship transfer was to be Manzengwenya- Mbazwana State Plantation complex in KZN, a total area of close to 20 000 hectares. The process of rehabilitation and transfer has been underway in a stop-start fashion for more than ten years now, and has again faltered. Over the past few years, significant progress was made in replanting a proportion of compartments using funding received from the DBSA Jobs Fund. This is now on hold because the funding came to an end, and follow-on funding has not yet been approved. Allegations of elite capture and corruption on the part of local leadership have also dogged progress and are reported to be behind the current stalemate.

More than twenty years have passed since government signalled its intention to restructure the state plantations in the 1996 Forestry White Paper. After successful privatisation of the Category A packages the process stalled, and little progress has been made with transfer of the remaining assets. Although listed as a focus area of the Action Plan developed at the 2016 Forestry Industry Bosberaad, columns indicating allocation of responsibility, resources and timeframe for rehabilitation and transfer remain blank (South Africa Dept. of Agriculture Forestry and Fisheries, 2016a).

In addition to DAFF’s delays, the current government impasse in formulating pro-poor communal land tenure reform legislation and policy that confirms customary living land rights rather than ceding control of land to traditional authorities is a major barrier to progress and presents significant risk of elite capture. Risk of alienation of land rights and elite capture are even higher on land under the custodianship of the Ingonyama Trust Board in KZN (including Manzengwenya- Mbazwana plantations) where IPILRA does not apply (South Africa High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change, 2017)

¹ Traditional leaders gave the government permission to establish the plantations on communal land under their control on the understanding that local rights holders would benefit from jobs and forest products.

6.5. Forestry as catalyst for economic revival in communal lands

6.5.1. Employment creation potential

The Strategic Environmental Assessment (SEA) commissioned by the then Department of Water Affairs and Forestry (DWAF) in 2003 estimated there to be 100 000 hectares of land suitable for new afforestation in the Eastern Cape. DWAF provided an estimate of an additional 40 000 hectares of afforestable land suitable for small grower afforestation in catchments in KwaZulu-Natal in 2004 (Chamberlain *et al.*, 2005). In both provinces, these afforestable areas are within communal land. Several forestry strategic plans, including the Genesis Report and the AsgiSA Plan for Eastern Cape Forest Sector Development (Chamberlain *et al.*, 2005; Accelerated and Shared Growth Initiative for South Africa, 2009) use these estimates, along with the area of existing state plantations and estimates of area of wattle jungle, in their scenarios for growth of community-based commercial forestry enterprises.

The Mabandla community (see Box 2) has received considerable recognition for its successful approach in leveraging income from timber as the basis for sustainable local economic development, wealth and employment creation. The key question is why has it been so difficult to replicate this example elsewhere? For more than twenty years, the government, national and international development agencies, and the forestry industry have designed strategies, implemented projects and invested considerable sums in promoting forestry development in the Eastern Cape and, to a lesser extent, KwaZulu-Natal. The figures 100 000 hectares of land suitable for afforestation in the Eastern Cape, and a further 40 000 hectares in KwaZulu-Natal have been cited so often in reports, strategies, conference papers and speeches that they have now achieved a mythical quality.

Table 6.3 summarises targets set in the Genesis and AsgiSA strategy documents for forestry enterprise development in the Eastern Cape, and the outcome so far under the two prominent and well-funded programmes currently in place to implement these strategies

Table 6.3 Strategic projections for forestry development potential in the Eastern Cape and implementation to date

	Strategic Projections		Implementation 2015/6	
	Genesis 06	AsgiSA 09	ECDC/ ECRDA	IDC
New afforestation (ha)	60 000	100 000	2700 planted	7773 planned
No. Projects			5	15
DAFF plantations (ha)	27 000	28 500	0	0
Wattle jungle (ha)	10 000		0	0
Value generation: forestry	R278m			
Value generation: process	R216m			
Jobs-Forestry	26250		819	0
Jobs-processing	1708			
Investment (10 yrs)	R840 m	R1800 m		
Jobs/ ha	0,27		0,30	

Sources: ECDC/ECRDA: *Times Media (2016)*; IDC Projects: *Ngubane 20156.5.2. Enabling forestry development: key requirements*

A review of commercial forestry enterprises within areas identified as suitable for afforestation in the Eastern Cape and KwaZulu-Natal found evidence for no more than 20 community-based projects, comprising less than 35 000 hectares of plantation (Howard and Madlala, 2015). An examination of the necessary conditions for success in community-based forestry enterprise, is drawn on the lessons from Mabandla and other successful community-based forestry enterprises, from interviews conducted during this research, and from a review by Ballantyne and Nixon (Ballantyne and Nixon, 2015). It has also been informed by current debates on land reform and traditional leadership arising from the release of the High Level Panel Report (South Africa High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change, 2017).

Availability of suitable land

The oft-cited estimations of areas of afforestation potential in the Eastern Cape and KwaZulu-Natal are based on biophysical data adjusted downwards by a factor to take account of existing land use. On the ground, land suitability and availability are constrained by much more nuanced realities. An overall area may be suitable for timber production but compartments must be sited for optimal growth: production from sub-optimal sites will not justify investment costs (Howard and Madlala, 2015). Land availability is subject to existing and aspirational land use. In communal land, there are most likely multiple rights holders, each with different claims and aspirations to commonly held land. A key step in an afforestation planning process is land allocation by the affected community members and local leaders. Areas allocated also need to be large enough for the venture to be economically viable. This is one of the reasons that the Mabandla plantation has been so much more successful than the smaller plantation at neighbouring Zintwala (Ballantyne and Nixon, 2015). As a rule of thumb, a minimum area of 1000 hectares provides sufficient income to cover costs and generate profits to

invest in other businesses¹ This estimate of minimum areas is, however, subject to a range of other variables affecting profitability, such as timber prices, cost of transport to markets, and input costs.

Access to markets

As the demand for timber is very high across most value chains, the main limit for producers is the cost of getting timber to markets. The main factor influencing this cost is distance, although availability and cost of transport service also play a role. A decline in rail transport services has negatively affected the forests industry: lobbying for improved cost structure and services has been a major focus of the Forestry South Africa Transport Committee (Forestry South Africa, 2016). Communal areas are usually further from markets, and poorly served by rail and road networks in comparison to the established large and medium growers in freehold areas. Producers in these areas are therefore likely to be burdened with much higher transport costs. This in turn negatively affects market access and profitability.

There are various means available to community-based producers to reduce transport costs and improve market access. One is to bring markets closer through investment in local processing facilities. Local processing also creates additional revenue and employment. The sawmill at Mabandla is expected to generate an additional R1.1m in profits and create 17 jobs in Phase 1 (SA Forestry, 2016a). Cooperative transport and marketing services have benefited independent timber producers enormously in South Africa. Timber marketing cooperatives initially established by commercial timber farmers have extended their membership and services to small and community-based growers in Communal Land, with considerable success. Reduced cost of transport through establishment of timber depots has been particularly beneficial to small growers in remote areas. Industry-level lobbying for improved rail and road services benefit mainly established growers, but there are also ongoing efforts on a project basis to lobby for improved transport infrastructure that will benefit all (Accelerated and Shared Growth Initiative for South Africa, 2009).

Strong financial viability and access to funding

Financial viability and access to funding are closely related and have proved to be among the main barriers to expanding area under afforestation on community land. Even short rotation hardwoods have a minimum period of eight years between investment and income from first harvest. Long rotation softwoods are grown on a 25 to 30-year rotation, a considerably longer waiting period, only partially offset by timber from thinning operations carried out every five years from year eight. Upfront finance is therefore needed to cover costs until first harvest and beyond; financial breakeven is usually only achieved 15-20 years after first establishment in the case of short rotation hardwoods. For this reason, grant financing is usually required in order to leverage loan finance, although a combination of subsidised support services and low interest loans is feasible on high potential sites (Howard and Madlala, 2015). The IDC has for many years provided finance for community-based afforestation, but accessing these loans usually requires upfront investment in the form of a grant that will not attract interest.

The South African saw-timber industry was established through direct investment by the State in long rotation softwood plantations. These state forests, the majority now privatised, provide the raw material for a highly profitable sawmilling and downstream industry (Mabece, 2016). The case for a state funded afforestation grant has been made

¹ Peter Nixon, pers. comm.

repeatedly in strategy documents and at all manner of fora, conferences, and workshops over many years. The action plan arising from the 2016 Forestry Industry Bosberaad identifies 'lack of a dedicated fund for forestry' as an issue, and outlines interventions to address this, but allocation of responsibility, resources and timeframe remain blank (South Africa Dept. of Agriculture Forestry and Fisheries, 2016a). Other sources of grant finance for afforestation projects have been mobilised in the interim, but these tend to be associated with very large projects, and there is still no easy way for individual communities to access grant funding as leverage for development finance. In 2013 the DBSA Jobs Fund approved a grant of R113m for implementation of eight community projects. The Eastern Cape Development Corporation (ECDC) and Eastern Cape Rural Development Agency (ECRDA) contributed a further R30m (Times Live, 2016).

Even prior to start-up finance, community-based afforestation schemes require considerable investment to reach bankability. This has proved to be a major barrier to achieving afforestation targets. Recognising this, the IDC put in place a forestry development programme in the Eastern Cape to fund screening, scoping, land use planning, licence application, and business plan development for community based afforestation projects. Fifteen of an initial 24 projects identified to have potential satisfied scoping requirements and, of these, five have been prioritised for further planning and licensing support (Ngubane, 2015). The programme has been running since 2013, and none of the five priority projects have reached bankability stage- an indication of the onerous and expensive nature of the project screening and planning phase.

Table 6.3 provides a good indication of just how much effort and expense goes into both pre-planning and implementation of afforestation projects: targets set in strategic plans in the mid to late 2000s are only now coming to fruition, and area planted to date comprises a mere 2% of the target figure. At this stage, there is no way of knowing what proportion of these new plantations will become sustainable businesses. Some other key factors underpinning the success at Mabandla and other areas deserve highlighting. Tenure security and effective democratic governance

Constitutional provisions for tenure security on communal land have still not been enacted by government, and policy has drifted away from a pro-poor stance focused on an interpretation of customary law based on living custom, to one favouring traditional leadership and open to elite capture (South Africa High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change, 2017). The lack of formal recognition of customary land rights is a major barrier to forestry development and presents a risk of elite capture. The threat to development is further exacerbated back by leadership conflicts and confusion over the role and status of traditional leaders relative to that of local government.

The High Level Panel Report states that:

“Parliament is encouraged to pass legislation within the constitutional framework that clarifies the status of both land and governance structures in order to provide certainty and avoid ongoing tension and contestation” (South Africa High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change, 2017, p. 39).

The special case of the Ingonyama Trust Act (ITA) land in KwaZulu-Natal has been highlighted as of particular concern by the Panel. This legislation, enacted by the apartheid government just prior to the 1994 elections, weakened customary tenure rights through vesting land ownership in the trust. This has left customary rights of ordinary people living in these areas vulnerable to dispossession and liable for ever increasing lease fees to occupy their own land.

Successful development initiatives on the ground, such as that at Mabandla, have been able to contain these risks to a greater or lesser extent. The Mabandla Community Trust (MCT) has been trying to get some form of legal tenure for over a decade. Development has taken place, despite the lack of secure, formal land rights. The lack of legal tenure is, however, now preventing the MCT from accessing a planning grant from government, and stalling the implementation of a large agro-processing enterprise¹.

Traditional leaders have played a central role in forestry development at Mabandla (Box 2). Where Traditional Leadership is disputed or in conflict, however, there is little chance of successful development taking place. What seems to be important for local development is for leaders, and the governance structures in which they operate, to be widely trusted and supported by local community members (Howard and Madlala, 2015). Ballantyne and Nixon go a step further asserting that sustainable development requires truly visionary and dedicated leadership, as has been the case at Mabandla (Ballantyne and Nixon, 2015).

Associated with leadership is governance and management. Separation of civil governance from enterprise governance in communal land contexts has been shown to be an effective means to manage potential abuses inherent in collective property and business ownership (Howard and Madlala, 2015). The model in which civil governance is the responsibility of a community trust or CPA, and a separate company is formed to run the enterprise, has been successfully demonstrated at Mabandla and in other areas. Training and support is also needed to ensure that trustees, employees and directors all clearly understand their roles and responsibilities.

Establishing sound financial practices and management systems within all legal entities is essential (Ballantyne and Nixon, 2015). From the outset, the forestry enterprise at Mabandla was planned and managed according to established forest industry standards and practices. A team of qualified professionals provided legal, financial, technical and managerial support, and local staff has been educated and trained to take over these roles. The original support partners still play a key role and remain deeply committed twenty years later, now supported by other specialists, handpicked for their competence and dedication.

Development partners

The crucial role of committed and competent development partners has already been pointed out. The important role played by Radebe and Nixon, and more recently by other specialists engaged to provide leadership and expertise to a new suite of enterprises, is acknowledged by the local community and leaders at Mabandla. What is required to ensure similarly effective partner support in other areas?

At a practical level, a key consideration is funding. The model established at Mabandla is interesting, as service fees were built into plantation running costs from the start. Access to grant funding for establishment was crucial prior to first harvest, but even after, and without any grant funding, the business has paid for advisory and support services. This has obvious pros and cons. Paying for all expenses, including advisory support, and still generating a profit is clearly a mark of a sustainable business. Reliance on donor support that is later withdrawn has crippled many a hopeful development initiative. On the other hand, these fees do place a burden on the enterprise and reduce viability and profits. Umsonti NPO was formed with the aim of raising grant finance to cover development partner costs in community-based afforestation projects in South

¹ Peter Nixon, pers comm

Africa. Umsonti has since developed an alternative 'social entrepreneurial' financing model, buying shares in new community-owned enterprises. In future, dividends from these enterprises will be used to finance the service offerings of the organisation and will be re-invested in other start-ups.

The services of timber marketing cooperatives such as NCT (Box 1) could also be more effectively and widely distributed to emerging small growers and community-owned forestry projects through a public private partnership approaches. Recommendations for this are made in the conclusions section of this report.

6.6 Small growers and contractors in Kwa-Zulu Natal

The emergence and proliferation of small-scale family timber plantations in the Ingonyama Trust areas of rural KwaZulu-Natal over the last 30 to 40 years is a striking example of responsiveness to markets. KwaZulu-Natal is the centre of the pulp and paper industry, wood chipping industry, and wattle bark industry. Large pulp and paper mills plants provide a ready market for timber grown within economic transporting distance. There has also been a proliferation of timber contractors servicing these growers, focusing mainly on timber harvesting and transport.

There are no reliable figures for the number of small timber growers or the total extent of their plantations. Outdated and inaccurate industry estimates are continuously recycled. The vast majority of small grower plantations are known to be located in KwaZulu-Natal, with a particularly high density in uMkhanyakude and King Cetshwayo district municipalities around and to the north of Richards Bay where there is a pulp mill and several chipping plants.

Based on satellite imagery, Mondi Zimele estimates there to be a total area of 40 000 hectares of plantations in these northern coastal areas of KZN. Grower numbers are estimated at 10 000, a figure derived from average small grower plantation sizes, and extrapolation of known grower numbers attached to company-run outgrower schemes.

Forestry South Africa is currently developing a National Small-Scale Timber Growers database as a source of information about small growers. FSA is assisting district municipalities to establish timber grower associations and to encourage all small growers in districts to join. The FSA database shows only a total of 3 000 growers with 16 000 hectares of plantations in uMkhanyakude and King Cetshwayo District Municipalities. The discrepancy between these and the Mondi Zimele estimates suggests that the majority of growers have not joined their District Timber Growers Association. A likely explanation is that growers who have not obtained the necessary authorisations to plant trees may be reluctant to draw attention to themselves by joining growers associations.

According to analysis done by Mondi Zimele, it is evident from timber buyer records that productivity of small scale grower plantations in these northern areas of KZN is low, and declining. Intake into the mills declined from 500 000 tonnes in 2005 to 240 000 tonnes in 2015. Annual production of 2-300 000 tonnes from 40 000 hectares suggests a Mean Annual Increment (MAI) of between 5 and 7,5 T/ha/annum, considerably below MAI of 15-20 that can be expected from a well-managed plantation in the area. Low and declining productivity amongst small growers is attributed to sub-optimal plantation management, including low rates of replanting. Based on satellite imagery and ground truthing, Mondi Zimele estimates 30-40% of small grower plantations are unplanted, a figure considerably above industry norms.

With adequate technical, financial and business support, Mondi Zimele has estimated that small grower productivity levels and income could be quadrupled. According to its

estimates, an additional USD 5,5 m could be generated annually (Smith, 2016 cited in Dobson (Dobson, 2017), bringing the total income from forestry sales in the area to USD 19,37m.

Forestry South Africa recently commissioned an investigation into small growers in the Sokhulu area in King Cetshwayo District Municipality, north of Richards Bay. The key deliverable was a business plan for investment into optimisation and re-establishment of small grower plantations in the area (Forestry South Africa, 2017b). The plan outlines a planting programme phased over six years, funded by King Cetshwayo District Municipality and supplemented by in-kind contributions from private sector forestry companies. A conventional outgrower model has been proposed in the plan, despite evidence that use of this model has created dependency amongst participating growers, and is at the root of the failure by many small growers to re-establish their plantations. Pursuing the same approach (this time using public finance) is likely to yield the same result: short term benefits to growers, more timber for the mills over one or two rotations, followed by rapidly declining yields and income. That the largely discredited outgrower model should form the basis for this important, public-funded re-capitalisation initiative suggests the government partners involved lack capacity and the will to represent public interests in effective and sustainable transformation, job creation and poverty alleviation.

Opportunities for new afforestation have also been identified in the province. The small grower mapping done by DAFF in 2006 estimated 40 000 hectares of afforestable land. The Genesis study estimated that, if realised, this could create some 15 000 livelihood opportunities (Chamberlain *et al.*, 2005). Given that support to existing small growers has drastically declined, and is insufficient to maintain productivity levels, however, it is clear that this potential will be largely unmet for the foreseeable future. For now, efforts by government and the private sector are focused primarily on recapitalisation of existing small grower plantations. Job creation estimates cited are summarised in Table 6.4.

In addition to the lack of information about the number of small growers and extent of plantation assets, land and governance issues surrounding small grower forestry in rural KZN have been little researched. To what extent has the proliferation of small grower plantations been an exercise in elite capture, depriving poorer households of access to land rights and to resources held in common? The current dispensation of land ownership vesting in Ingonyama Trust, and controlled by traditional authorities, severely weakens households' customary land rights and presents risk of elite capture (South Africa High Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change, 2017). How equitable is the allocation of land by traditional authorities for plantations establishment? Efforts to promote and support small growers that are blind to these dynamics may create opportunities amongst a local elite at the expense of jobs, lives and livelihoods of poor and vulnerable households.

6.7 Summary of employment opportunity estimates in forestry

Table 6.4 Potential Job Opportunities in Forestry

Opportunity	Jobs	Source
Private timberland restitution and intensification	35 498	Estimate, Table 6.1
New Afforestation + DAFF plantation recap E Cape	26 250	Genesis 2005
New Afforestation KZN	15 000	Genesis 2005
Value chain E Cape	1708	Genesis 2005
Value chain KZN	429	Genesis 2005
Sokhulu recapitalisation	3405	After Dobson 2017
Total	82 290	

How achievable and realistic are these estimates?

The estimate for potential employment through restitution of 40% of privately owned plantation land is based on three exceptionally successful, employment intensive case studies. Given the track record of land restitution to date, these estimates are probably unrealistic. They do serve to illustrate, however, what could be possible given the political will, adequate funding, and support. Priorities related to this are also highlighted in the conclusions section of this report.

Job opportunities associated with new afforestation and the transfer of DAFF plantations in communal land in the Eastern Cape and KZN remain elusive. Progress in realising the potential for forestry development has been close to negligible to date, for reasons discussed in section 6.5. Some, but not all, of the constraints can be addressed with sufficient political will, and priorities related to this are highlighted in the following section 8. Access to grant funding would most certainly unlock a portion of this potential. Using forestry as a catalyst for other community owned businesses as demonstrated at Mabandla could create significant employment and income multipliers over and above the estimates here.

7. OPPORTUNITIES FOR EMPLOYMENT: FURTHER INDUSTRIALISATION OF FORESTRY VALUE CHAINS

7.1 Overview

Forestry, pulp, paper, and furniture is identified as components of a lead sector in the South African Industrial Policy Action Plan. Forest product industries offer high growth and employment creation potential, much of it in rural areas where unemployment is highest and economic development most needed. The timber industry, especially sawmilling and manufacturing activities further down the value chain, is one of most

labour-intensive industries in the economy (South Africa Dept. of Trade and Industry, 2017). SAFCOL hosted a Forestry Industrialisation Conference in October 2017 to showcase and explore opportunities and constraints to developing forestry value chains (South African Forestry Company, 2017).

Global markets for pulp, paper and timber declined sharply in the aftermath of the 2008 global financial crisis. SA woodchip exports declined from 5 million tonnes in 2005 to 1 million tonnes in 2009. Traditional markets in pulp and paper are now recovering, especially markets for high quality paper used in glossy magazines and books. This has made up for the steady decline in markets for newsprint, as online media replaces the print media. New markets for wood fibre are emerging, in particular biofuel/ green energy and for dissolving pulp products. The future for woodchip exports looks bright, with a global under supply predicted, leading to improved prices.

Saw timber produced in South Africa supplies the domestic market, with more than 70% used in the construction industry. Recovery rates in sawmills are below international standards, and there is need for investment in improved machinery (Robertson, 2018). In addition, the plantation resource is underutilised. In 2012/2013 only 18,5m m³ of timber out of sustainable plantation yield of 26,4m m³ was harvested (Dobson, 2017) . Exports are negligible, and imports are mainly of high value hardwoods that are not produced locally (Sawmilling South Africa, 2014). The industry also took a big knock in the aftermath of the 2008 global financial crisis. Domestic demand for saw timber declined by 35% between 2005 and 2009 (Sawmilling South Africa, 2014).

Markets are now picking up, strongly linked to the recovery of the building industry. The supply shortfall predicted during the boom years of the mid 2000s was averted because of the post 2008 economic slowdown and conversion of pulp mills from softwood to hardwood pulp production. This has released an extra volume of pine onto the market in the short to medium term. Longer term projections, however, show a growing shortfall between supply and demand for saw timber¹. Independent small saw millers are hardest hit by supply shortages as, unlike the larger players, they do not have their own plantation resources. This group previously depended on state plantations.

Privatisation of the Category A state plantations and the declining productivity of the remaining state managed plantations has severely affected independent saw millers (Crickmay and Associates, 2005).

Alongside the recovery of traditional markets, there is rapid growth in new markets, particularly those for wood products that provide green alternatives to fossil fuels, including biomass energy and dissolving wood pulp. Wood from well managed plantations is a renewable, sustainable resource that is carbon-neutral. The South African timber plantation industry has one of the highest percentages of internationally certified plantations in the world², a key advantage in supplying emerging markets for sustainably produced wood products.

The opportunity these growing markets present the industry is tempered by limited supply. There are, however, some key opportunities for growth and job creation through waste wood recovery, use of timber from clearing of alien invasive trees, development of new products, and further value addition. Currently more than half of all timber

¹ Roy Southey, Sawmilling SA

² Forestry Stewardship Council (FSC) certification is the main forestry certification system in South Africa. <https://ic.fsc.org/en>

harvested is unutilised and presents a costly waste disposal problem. New products from wood waste present considerable opportunities for industrialisation, import substitution and employment creation (Sithole and CSIR Biorefinery Industry Development Facility, 2017).

7.2. Biomass energy

South Africa faces critical energy supply shortages and rapidly growing demand. Further, some 20% of urban and 50% of rural households are still not connected to an electricity supply and depend on unsustainable, inefficient wood burning technologies for cooking and space heating (Petrie and Macqueen, 2013). The Department of Energy Integrated Resource Plan (IRP) 2010–30 targets 33% allocation to renewables by 2030 (South Africa Dept. of Energy, 2011). Biomass energy has potential as a key source of renewable energy in South Africa, along with wind and solar (South Africa Dept. of Minerals and Energy, 2003). Biomass energy can be used to replace coal in base-load power generation, unlike solar and wind that, in the absence of adequate storage capacity, are weather dependent.

Biomass also has considerable potential to provide off-grid electricity and fuel for direct heating in rural areas currently not connected to the grid. Biomass is already the main source of energy for more than 80% of rural households, but access to more efficient and sustainable cooking technology is a high priority, along with off grid electrification.

A high proportion of timber harvested currently goes to waste. Timber recovery rates in South Africa are extremely low; some 53% of woody biomass harvested is unused (Sithole and CSIR Biorefinery Industry Development Facility, 2017). Harvesting residues left in fields, and sawmill waste, present significant disposal problems and raise production costs. A single paper mill in South Africa is reported to spend R20 million/annum to dispose of waste materials (Sithole and CSIR Biorefinery Industry Development Facility, 2017). Domestic energy supply shortfalls and rapidly growing international markets for biomass-based fuels provide opportunities to make use of this waste material and create additional jobs in collection and processing of waste products. Biomass energy is labour intensive in comparison to other energy sources (Petrie and Macqueen, 2013).

Despite this potential, biomass energy is still significantly underdeveloped in South Africa. High collection and transportation costs prevent plantation residues from being utilized. Prices for biomass would need to increase significantly to make this a viable commodity. Self-sufficiency and co-generation capacity has been successfully installed in some pulp and sawmills around the country, including Sappi Ngodwana and Saiccor, and the MTO/Cape Pine George Sawmill (SA Forestry, 2013, 2016b). In 2011/12 the IDC invested in two biomass pellet mills, one at Coega in Eastern Cape and the other in Sabie. Both failed to cover costs and had to be closed down in 2015. The cost of transport

(including very high port costs) to European markets was uneconomic, and domestic demand still insufficient. In addition, the failure to sign a purchase agreement with ESKOM derailed plans to establish a co-generation plant at the Sabie pellet mill, further escalating costs and reducing projected income (Petrie and Macqueen, 2013).

Markets for biomass energy are growing internationally, along with a shift away from coal and towards renewable energy sources. The global transition to renewables is rapid, driven by the need to reduce fossil fuel emissions, a primary cause of climate change. In 2016, 48 countries pledged to transition to 100% renewable energy by 2050 (Payton, 2016). Sweden, Costa Rica, Nicaragua, Denmark, Scotland, Germany and China lead the way in the race towards 100% renewables (Clean Technica, 2016). Sweden is the world leader with more than half (53,9%) of energy from renewables in 2015 (EUROSTAT, 2018).

In the European Union, biomass is the third largest source of renewable energy for electricity generation after wind and solar, and an important component of renewables used in heating and cooling. The conversion of power stations from coal to biomass is driving a boom in the wood pellet market. The United Kingdom is the largest importer of wood pellets in the world, followed by Denmark and South Korea. The United States and Canada are the main suppliers (Forestry South Africa, 2014). South Africa is struggling to compete in this market, however, as a result of distance to the main markets in Europe, and high port charges in South Africa.

South Africa exports large quantities of woodchip, and there is potential to divert these into manufacture of biofuels. Production of biofuel pellets would be a means to add value to woodchip, create additional jobs, and substitute coal with a green energy source to achieve carbon emissions reduction targets. Although renewable energy from biomass is a real opportunity that would have multiple spinoffs, including job creation and reducing national carbon emissions, it requires commitment from government to become a reality.

The main constraints facing the development of biomass energy in South Africa are:

- High cost of collection and transportation of in-field residue in relation to the price of woody biomass on local markets;
- The high cost of transporting pellets to overseas markets relative to other producers;
- Lack of a domestic market for pellets;
- Failure on the part of ESKOM to facilitate acceptable purchase agreements from independent power producers in line with government's co-generation policy;
- Lack of investment in improved cook stove technology and promotion in rural areas.

7.3 Dissolving wood pulp value chain

Sappi is the leading producer in the world of dissolving wood pulp (DWP), also known as specialised cellulose. Sappi has three mills, one in the USA, and two in South Africa, producing this specialised product. DWP is used to produce viscose fibres for textiles, cellulose acetates for LCD screens, cigarette filters, spectacle frames, and carboxymethyl cellulose (CMC) as a thickener in foods and pharmaceuticals. The future of DWP is as a sustainable renewable alternative to fossil fuel derived products such as plastic and polyester. Other new applications being developed include films, coatings and advanced nano-cellulose-based materials (SWECO, 2016). Sappi recently announced plans to significantly expand the production of DWP from both Saiccor and Ngodwana Mills by 2020 (Mchunu, 2017).

Almost all of the DWP produced in South Africa is exported and further processed outside the country (Sappi Global, 2017). There is considerable potential to build a manufacturing industry based on processing of DWP into these multiple products. The private sector needs support from government in developing this new industry. Development of the strategic framework to leverage opportunities in new nano-cellulose products is one of four forestry Key Action Programmes in the IPAP, signalling commitment from DTI to supporting the development of this industry in South Africa (South Africa Dept. of Trade and Industry, 2017).

7.4 Other new 'green' products from wood waste

Advances in bio-refinery technologies have resulted in a range of new marketable products from sawdust, such as xylitol and pine oil. Both these products command good prices on local markets and demand for them is currently met mainly by imports. Disposal of sawdust is a big cost to sawmills, and an environmental hazard. Creating

value from this waste stream would reduce costs of disposal, limit environmental damage, and create additional jobs (Sithole and CSIR Biorefinery Industry Development Facility, 2017).

7.5 Furniture, timber and housing

Opportunities for growth in sawmilling is constrained by the limited supply of saw logs. This shortage has been partially alleviated by supply of pine from softwood plantations grown for pulp. After conversion of pulp mills from softwood to hardwood processing, softwood timber grown for pulp is being diverted to sawmills. Pine grown for pulpwood is, however, of inferior quality for lumber production, and the supply temporary, as the harvested pine compartments are being replanted to hardwoods.

Because of supply constraints to sawmills, the main opportunities for growth in the sawmilling value chain are in secondary processing, in particular furniture and timber frame housing (Dobson, 2015). Furniture manufacturing is an established industry in South Africa, and is labour intensive. New businesses face competition from cheap imports and dominant domestic players. There is potential, however, for new small businesses to produce for special markets, such as low-cost housing, schools, local markets, and in future, with more investment in these businesses, high-end niche markets (Dobson, 2015). A furniture competitiveness programme is one of the IPAP Key Action Programmes identified for the sector.

In a study of wood processing feasibility conducted for the KwaZulu Natal Department of Economic Development and Tourism, Dobson (2015) identifies opportunities for low cost timber-frame housing, especially in areas where timber can be sourced directly from sawmills (Dobson, 2015). The high cost of retail timber, as well as unfounded negative perceptions in the region about quality and safety has constrained this industry to date.

Timber frame housing is widely accepted as a cost effective and high-quality building method in many countries of the world including throughout Europe and North America and Japan, where more than 70% of houses are timber frame as against less than 1% in South Africa. The global imperative to lower carbon emissions is driving a global trend towards wooden construction. Wood is the only construction material that is carbon neutral. Conventional building materials, including concrete, steel, and bricks have a high carbon footprint, and houses built from these materials are much less energy efficient than well designed timber houses (Slabbert and Institute for Timber Construction, 2017).

A wide range of innovative wooden housing and construction technologies is being developed and tested in South Africa, spanning high and low-cost housing markets. The Institute for Timber Construction in South Africa (ITC-SA) is the *South African* Qualifications Authority (SAQA)-accredited body responsible for creating and maintaining standards for the industry, and for promoting the use of wood in construction. The chief barrier to further development of timber construction in South Africa is negative perceptions based on misinformation. Implementation of the proposed carbon tax would create incentives for public and private sector investment in timber frame housing, as a means to offset carbon emissions (Slabbert and Institute for Timber Construction, 2017).

8. CONCLUSIONS AND POLICY RECOMMENDATIONS

8.1 Overview of the constraints and opportunities for job creation

The global imperative to reduce greenhouse gas emissions and limit climate change is driving optimism and investment in timberlands and wood-based industry internationally. From the revival of interest in wooden buildings, to a host of new 'green' products manufactured from wood and wood waste, and from renewable biomass energy to saving remaining intact forest landscapes, plantation forestry and wood products industries have a central role to play in meeting global sustainability targets.

South Africa's mature and well-developed plantation forestry industry is poised to take advantage of these global trends and new markets. Having one of the highest rates of forestry certification in the world, South African growers can access markets reserved for sustainably produced 'green' timber. The industry is already strongly export-led and linked to international markets. Timber giants Sappi and Mondi are amongst the five largest players in the world, both with international holdings. Sappi is a world leader in production of dissolving wood pulp, used as a green alternative to petrochemicals in the manufacture of plastics, textiles, electronic devices and many other products. Timber marketing cooperatives established by independent growers more than five decades ago have consistently provided their members with access to lucrative overseas markets and a share of proceeds from beneficiation. Although still marginal to the sector, smallholder and community-owned commercial plantations have spread in communal areas, especially those in proximity to paper mills. There is considerable potential to expand timber growing in these areas and to create a source of revenue to drive further business development and employment.

Growth and employment creation in the industry is, however, constrained by some key factors. Limited water availability in catchments suitable for afforestation limits the total extent of timber plantations. This in turn limits the supply of timber to value chains. Trends towards labour outsourcing and mechanisation have negatively affected the quality and number of jobs in the forestry industry. Impacts on wages and working conditions have, however, been mitigated in recent years through legislation introduced to protect vulnerable workers. These include the Forestry Sector Sectoral Determination that established a minimum wage for the sector in 2006, and more recently, the National Minimum Wage.

Job losses as a consequence of mechanisation are being offset in various ways by employers in the sector. Jobs have been created through re-investing timber sales proceeds into conservation of open areas, as the contrasting Mondi and Mabandla examples show. More jobs can be created on the same area of land through diversifying production and investing in value adding operations, the Greytown farmers and Mabandla community trust case studies demonstrate. Other employers, in particular larger operations, have increased their corporate social investment spend in line with BBBEE scorecard targets, creating employment through supporting enterprise development within surrounding communities. Mondi Zimele operations have created an estimated 4 200 jobs in areas surrounding plantations. Sappi and other large growers have similar enterprise development support programmes.

The South African forestry and wood products industries are well established, internationally competitive, and contribute significantly to GDP and export earnings. These industries are largely based in rural areas and make an important contribution to rural employment and economic and industrial decentralisation. Global timber, pulp and paper value chains are highly competitive and the industry needs greater support from

government in order to remain viable and to fulfil growth and employment creation potentials. This study highlights two key opportunities to create employment in forestry and forest products industries: restructuring and revitalisation of existing timberlands, including expansion of plantations in communal lands, and further industrialisation of forestry value chains. Conclusions emerging from the review and analysis of these key opportunities and priorities for government support follow.

8.2 Forestry as a catalyst for rural revitalisation and land reform

Timber produced from sustainably managed plantations is a renewable carbon-neutral resource with rapidly growing domestic and global markets. The growth in investment in timberlands globally is an indication of confidence in the value of timber. Commercial timber production has a pivotal role to play in rural revitalisation, providing jobs and improving livelihoods, especially in the Eastern Cape and KwaZulu-Natal. Estimates compiled in this study suggest that forestry could create some 82000 jobs and livelihood opportunities through restructuring and revitalisation of existing timberlands and expansion of plantations in communal lands. The Mabandla case study demonstrates how timber can be used as a source of revenue and a catalyst for sustainable local economic development, wealth and employment creation. A much greater degree of political will is required to unlock this potential. The following key issues are of particular importance.

Realising constitutional provisions for land reform

As forestry is a land based activity, employment creation opportunities identified here are all dependent on the progressive realisation of the land reform provisions in South Africa's Constitution. The slow pace of restitution, redistribution and tenure reform programmes, and the legal and policy drift away from the pro-poor stance adopted in 1994 present major constraints to equitable forestry development and job creation. Overall recommendations aimed at supporting all three pillars of the national land reform programme, and addressing shortfalls and policy drift, have been highlighted in the High Level Panel report and are of direct relevance to forestry. Specific to forestry development and employment creation are the following recommended interventions:

- Review and evaluate restitution cases on privately owned and state forestry land and develop recommendations for the adaptation and improvement of existing policies and models;
- High level enquiry into the distribution of lease fees from privatised state forest plantations to communities with underlying land rights. Develop recommendations to expedite confirmation of informal land rights and settle land claims. Develop policies and protocols to enable funds to be disbursed, reduce risk of elite capture and ensure accountability;
- Recommendations developed to expedite the confirmation of customary rights to DAFF managed state forest plantations on communal land. This is a necessary step in transfer of these plantations to rightful beneficiaries. In the absence of legislation to secure customary title, IPILRA should be used as the basis for securing customary rights.

Building effective and democratic governance within communal lands

Along with land reform, the High Level Panel report urges government to take measures to ensure existing and proposed framework legislation governing traditional leaders is consistent with the Constitution and gives people living under the control of traditional leaders equal rights to those living in other areas of the country. Clarifying the roles and

function of traditional leaders is the basis for more effective and democratic governance, a key enabler of development in communal lands.

Provision of forestry development finance

Access to grant funding was a key enabling factor in establishing the Mabandla plantation. At the time, this took the form of pooled household land reform grants. There are currently no equivalent government funding instruments for the establishment of timber plantations. Government's investment at Mabandla has been repaid in VAT alone¹ – quite aside from the value that has been created through local employment, business development, and capacity building. Establishing a forestry grant scheme or other means to access grants is a pre-requisite for further expansion of forest plantation enterprises.

Recapitalisation finance is needed to rehabilitate and transfer existing DAFF-managed plantations in communal lands, especially those in Eastern Cape and KZN that could be combined with new afforestation to form economically viable units. Along with funding for replanting and rehabilitation of state plantations, there is need for DAFF to reaffirm its commitment to transferring these assets to communities with underlying land rights. Given the lack of progress over the past 20 years, a high-level task team should be assembled to ensure that obstacles are cleared and targets are met.

Funding is also needed for project and business development on communal land. To reach bankability, considerable investment is required, especially to fulfil legal requirements, including Environmental Impact Assessments (EIAs) and community consultation processes. The IDC and Vumelana Trust have funded the development phase of forestry and associated enterprises at Mabandla and a number of communities in the Eastern Cape. These funds are limited and insufficient to develop forestry operations in other areas with high potential.

Improving support services through public-private partnerships

The forestry industry benefited historically from both direct state investment and state subsidised technical and business support services. The industry is now well established and able to provide both markets and business support services to new entrants. The services provided by timber marketing cooperative NCT to its members are being extended to an increasing number of black timber growers, but further expansion is constrained by lack of funding. Servicing many smaller producers, often in remote areas, is not cost effective under the current financing model based on timber sales levies and requires a subsidy.

Government policy for forestry extension services recognises the need to partner with the private sector, but little progress has been made with implementing this vision. Public-private partnerships between government and industry organisations including NCT, Forestry South Africa, and Institute for Commercial Forestry Research (ICFR) would be an effective way to extend the network of timber collection depots, improve rail and road transportation services and provide extension services to black growers and community-owned timber businesses on communal land.

Building capacity and political will in the public sector

Beyond financing, government has a key role to play in mediating partnerships between the established private sector players and new entrants, including land reform beneficiaries, community trusts/CPAs, and small growers. There are many opportunities

¹ Peter Nixon, pers comm

within the sector with potential to significantly transform the industry, create employment, and address poverty. At present the established private sector players are dominating and largely controlling the terms of these partnerships. DAFF and other key departments need to play a much more active role in negotiation and formulation of public- private partnership agreements and business plans. This calls for greater political will, as well as investment in capacity building within key departments.

Improving transport infrastructure and lowering costs

Investment and pricing measures to lower road, rail, and port costs would contribute to lowering costs and increasing viability of businesses throughout the forestry and wood products value chain. Restoring rail services in rural areas is a particularly important priority for timber growers in many areas where branch lines have been closed and where the cost of road transport limits the viability of their businesses.

Supporting legality and certification

Certification by international market-based certification schemes such as FSC and Programme for the Endorsement of Forest Certification (PEFC) is increasingly required by both local and international markets. Legality is a fundamental requirement for certification. Small growers need support to comply with these requirements. Since 1998, it has been a legal requirement to obtain a Water Use Licence (issued under the National Water Act, 1998) to establish a new plantation. There is a high incidence of illegal plantations established by small growers on communal land areas in certain areas, mainly in KZN. According to new FSC requirements, these growers run the risk of being excluded from markets. The need to streamline, simplify, and speed up Water Use Licence application processes has been repeatedly highlighted but remains a key constraint to new afforestation.

Small growers and community-based forestry operators, including land reform beneficiaries, also need technical and financial assistance to become certified themselves. A complementary requirement is to work with certification agencies to develop risk-based and lower cost certification schemes that are more accessible to small and community growers.

8.3 Further industrialisation of value chains

The forestry and wood products industries are significantly under-industrialised, with a high proportion of timber being exported in raw and semi-processed form. Further, there is excessive wastage along the value chain. Considerable opportunity exists for processing of wood waste and for further industrialisation of the forestry value chain. Key interventions required to unlock the opportunities identified in this study follow.

Developing biomass energy markets and technology

The national energy shortage and worldwide transition away from fossil fuels to green energy present enormous opportunities for biomass energy development in South Africa. More than half of all wood produced currently goes to waste, and waste disposal significantly increases production costs. In addition to reducing cost of waste disposal and producing much needed energy, there is considerable potential to create jobs in harvesting and collection of waste wood, pellet manufacturing, and in biomass power plants. Opportunities for co-generation and pellet manufacturing businesses are currently severely constrained by high transport costs to international markets and lack of domestic markets for bioenergy. The following priorities for action have been identified (after Petrie and Macqueen, 2013):

- A more coherent policy and enabling provisions for renewable energy production and development;
- Development of a secure market for renewable energy including biomass through ensuring ESKOM purchase agreements are accessible and favourable to investment in the sector;
- Investment in biomass technology, including incentives to develop off-grid biomass energy plants and woodstove technology;
- Establishment of a biomass energy producers' association for greater agency and improved collaboration amongst producers (following the example of solar and wind energy producer associations).

Further industrialisation of the dissolving wood pulp value chain

Global markets for 'green' wood-based cellulose products are rapidly expanding and new applications are still being developed. Products produced from DWP are attractive as a sustainable low carbon alternative to products manufactured from petrochemicals. South Africa is well positioned to enter and become a leading player in this industry, with Sappi already a world leader in the production of dissolving wood pulp (DWP), the raw material for this industry. The DTI has recognised this potential and an action plan for the development of new cellulose products is in place in the IPAP. Implementation and monitoring of this programme should be prioritised by the DTI.

Support for research and development in wood waste bio-refinery

Current harvesting and processing technology is extremely wasteful, with over half of timber harvested under-utilised. Disposal of sawdust, bark, and sludge is very costly, contributes to greenhouse gas emissions, and increases the burden on landfill sites. The CSIR Bio-refinery Industry Development Facility is engaged in research with the University of KZN to investigate bio-refinery technologies that can produce a range of high value products from wood waste. The potential for revenue generation, employment creation, and waste disposal is enormous, and much more support is needed to ensure further development, piloting, and roll-out of the technology. Providing support for the installation of mobile bio-refinery units at small sawmilling operations, including bush-millers and community-based sawmills such as the Mabandla sawmill, will be a high priority when roll-out commences in the near future.

Support for furniture making and wooden construction technology

There has been significant investment in training and support for emerging furniture making enterprises, but many of these have failed. The action plan in the IPAP sets out strategic steps for revitalising the industry and providing support to small and emerging manufacturers. Existing government construction programmes, including low cost housing and rural schools could provide secure markets and income for emerging small businesses. Associated with this is the potential for much greater use of wood in housing construction in South Africa. There is a need to further develop, implement, and monitor policies and strategies to support timber housing, especially in the low-cost bracket where housing backlogs are particularly acute and threaten the health and wellbeing of a high proportion of the most vulnerable sectors of the South African population.

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