

## Unlocking barriers to dynamism and growth in plantation forestry in South Africa

### OVERVIEW

There is a need to assess the status of plantation forestry and what can be improved to facilitate the sustainable use of land and water resources in South Africa, and spread the benefit of efficiency gains in the value chain. There is also a need to assess the barriers that can be overcome to achieve the aim of sustainably managed plantation forests and furnish new opportunities for expansions in coverage, especially in historically underdeveloped areas to create new economic opportunities for economically marginalised communities.

### INTRODUCTION

Plantation forestry in South Africa provides about 158 400 permanent, contract, and informal workers with employment, and contributes R31.1 billion to GDP (DAFF, 2017). In addition to this socioeconomic benefit, despite the low employment figures, which are felt in the most underdeveloped regions of the country, plantation forestry implies important environmental spillover benefits. These include carbon sequestration, providing substitute habitat for animal and plant life, protection of ecological sites such as wetlands and riparian zones within the locus of plantation operations, and the mitigation of climate change related deforestation and desertification edge effects on indigenous habitat and forested land (Brockerhoff et al, 2008).

While covering a mere 1% of land area, the industry contributes to the economy and rural economic development (DAFF, 2016). It also uses less water and soil resources than agriculture in that forestry requires less pesticides and fertilisers and uses only 3% of national water resources compared to agriculture which contributes to soil erosion and uses 62% of water resources. However, plantation forests are not as biologically diverse or water-efficient as natural forest (DWS, 2015). Moreover, alien invasive species in plantation forests are water thirsty and this continues to discourage the promotion of plantation forests by the Department of Water and Sanitation (DWS), which affects future expansion in an era of unequal land ownership and water security challenges. Nevertheless, the

survival of plantation forestry in South Africa is crucial for the continued existence of an entire value chain that includes pulp and paper, sawmilling, wood-chipping, and furniture manufacturing. Efficiency in the industry and optimal use of resources is important for the long-term sustainability of the industry.

However, this brief argues that after three decades of ongoing improvements, the industry is reaching its limits in further improving the Mean Annual Increment (MAI) through silvicultural practices and further rationalisation in the planting of fields. This brief finds that land issues and water licensing may be stifling growth in domestic supply and future new afforestation; and is a priority to address for the whole value chain.

Also noteworthy, is that it competes with other land uses including agriculture, natural habitat and open savannah, and available space of productive arable land is scarce. Given all these constraints a key finding is that efficiency gains are required by improving downstream inefficiencies in processing and expanding supply of industrial timber for expansion across the value chain, and to mitigate against the need to import wood and pulp.

### PLANTATION FORESTRY IN SOUTH AFRICA

Plantation forests, which do not require irrigation, rely on 750mm of annual rainfall to be established successfully (Ledger, 2017). Put differently, only 16% of South Africa's land surface is climatically suitable for plantation forestry (Genesis, 2005).

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Large portions of this, however, are not topographically suitable for plantation forestry because of steep inclines and mountainous terrains, which produce accessibility constraints. This highlights the scarcity of land available for plantation forestry and the need for such forests to be run efficiently.

The rate of Forest Stewardship Council (FSC) certification is remarkably high in South Africa at 85%, which is the highest percentage of FSC certified plantation forest in the world (Ledger, 2017). Moreover, among South African plantation forests the high degree of certification is aided by the dominance of large firms in the industry, which own extensive plantations in their own right and are also major buyers of industrial timber from smaller growers. This bodes well for the preservation of natural capital in the industry. Indeed, thanks to the FSC certification process, much of South Africa's plantation forests, including uncertified plantation forests, are sustainably managed due to the Chain of Custody principle, which requires large buyers to only "buy from sustainably managed forest operations" (DAFF, 2015, p17).

### EFFICIENCY CONCERNS IN THE PLANTATION FOREST INDUSTRY

Silvicultural practices in the plantation forestry industry in South Africa over the last three decades have improved the rate of timber recovery remarkably. Indeed, the industry harvests 85% more industrial timber per hectare than it did in 1980 (Peter, 2017). These improvements and better rationalisation in the planting of fields have resulted

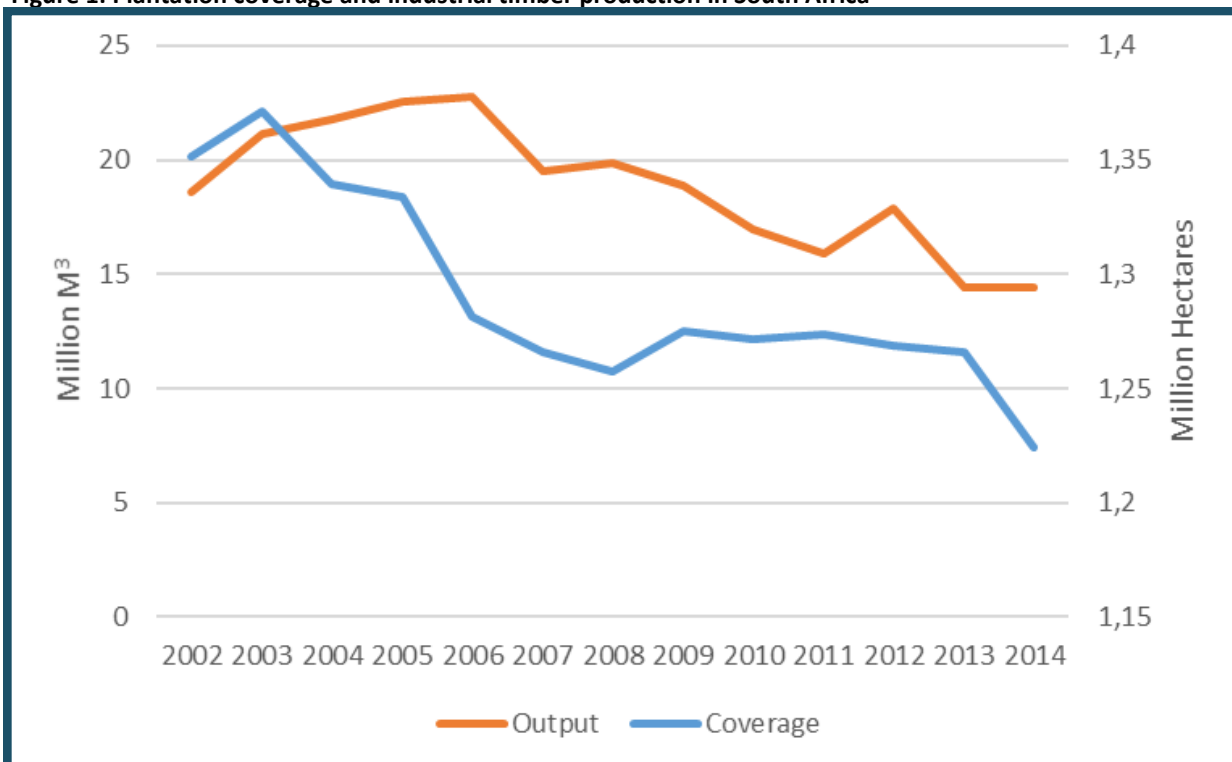
in an improvement in the MAI<sup>1</sup>. For silvicultural research, the industry collaborates through the Institute for Commercial Forestry Research, internal research initiatives in larger companies, and in partnership with the University of Pretoria, the University of Stellenbosch, and the Nelson Mandela Metropolitan University. Regardless, silvicultural improvement to feedstock is experiencing diminishing returns, which is a cause of concern as coverage and production are declining.

However, gains in yield per hectare are still possible through molecular-level breeding as opposed to more traditional practices. Indeed, new avenues in genetic modification present opportunities to breed for specific traits such as certain timber properties, resistance to pests and diseases which cause massive losses annually, and breeding for sterility to reduce the environmental impact of plantation species invasions into natural habitat, but these are attenuated by declining coverage.

Consequently, because of declines in coverage and production, improvements in silvicultural practices and the MAI have not met demand for wood products in the value chain. Figure 1 shows that between 2002 and 2014 both production of industrial timber (from 18 million m<sup>3</sup> to 14 million m<sup>3</sup>) and the coverage of plantation forest has declined (from 1.3 million hectares to 1.2 million hectares).

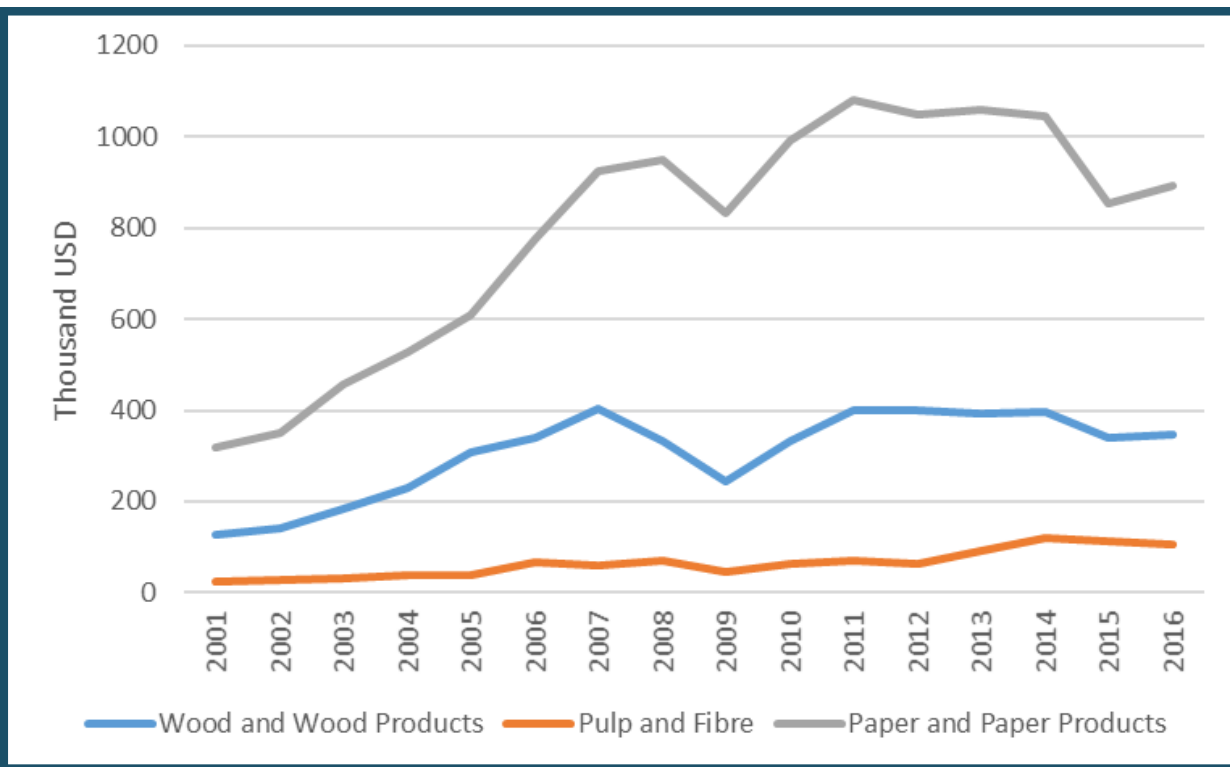
<sup>1</sup> This is defined as the volume of wood growing on one hectare during a year (m<sup>3</sup>/ha/year) on average since the plantation forest has been established.

**Figure 1: Plantation coverage and industrial timber production in South Africa**



Source: FAO 2016; Forestry South Africa 2017

Figure 2: South African imports of wood, pulp, fibre and paper products



Source: Based on Trade Map data

Figure 2 shows, by contrast, that South Africa’s reliance on imports of wood and wood products, pulp and fibre, and paper and paper products increased between 2001 and 2016.

Reduction in plantation coverage and production output has worsened since the 2008-2009 global financial crisis and the ensuing global economic downturn. However, the forestry, logging, and related services sector in South Africa shows encouraging profit margins and returns on capital increasing from 11% to 15% and 54% to 67%, respectively, between 2010 and 2015 (Statistics South Africa, 2017), which is good for capacities in research and development (R&D) and prospects for expansion.

With improving the MAI and rationalisation of site planting for plantation forestry in South Africa, Genesis (2005) suggested that improved planting practices and/or switching to shorter rotation crops could increase yields of industrial timber between 5% and 10%. Industry has been taking this approach with a shift in general from longer rotation pine to shorter rotation eucalyptus. The advantage of this approach is that eucalyptus grows about twice as fast and produces double the yield per hectare than pine. However it is a more water thirsty crop. Nevertheless, as seen in Figure 1, there is doubt on whether the silvicultural practices and MAI improvements have reverberated effectively through the industry.

However, according to the Paper Recycling Association of South Africa (PRASA, 2017), wood products recycling is positive in South Africa and improving, as the paper recovery rate rose from 38%

in 2001 to 66% in 2015, in part due to industry initiatives, but mainly due to the actions of workers in the informal collector sector. Furthermore, this recovery rate is above the international average of 57.9% reported by the International Council of Forest and Paper Associations in PRASA (2017).

Land reform could assist in expanding plantation forestry and creating economic opportunities, not only through the payment of rents, but also through small grower schemes. The industry has developed models that provide smallholders with the capital, equipment, seedlings, expertise, and future market to grow industrial timber for larger buyers. These schemes help develop rural communities, create jobs and earned incomes, and develop skills in forestry.

Land suitable for growing and the maintenance of plantation forests is often situated in traditional areas where establishing operations could be made more difficult by communal land rights, requiring community negotiation and consensus. However, this also opens up opportunities for the forestry companies to expand their outgrower schemes to incorporate more smallholder farmers and communities in these traditional areas. Dramatic scaling-up of these efforts would benefit both the forestry companies and impoverished communities. There is a clear role for the state to enable such expansion, and the Forest Charter is an important tool to resolve conflicts over various land uses, as well as integrate forestry and agricultural uses of land within a landscape context (Forest Sector Charter Council, 2017). This landscape approach means that

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communities can still access forested lands to harvest things such as food and medicinals from forests while the harvesting of industrial timber continues.

Furthermore, in 2005, 28% of government-owned plantation area remained unplanted compared to an industry norm of just 4% (Genesis, 2005). According to Peter (2017) this is still the case. This under-planting of state forests results in lost GDP, potential soil erosion on unplanted stands, and a loss of the environmental spillover benefits forestry provides. Given that space where climatic and topographical features support plantation forestry are in scarce supply, this situation on DAFF plantations contributes to a lack of efficiency in the industry. Again there is scope to empower communities and smallholder farmers in those impoverished areas where most of these state forests are located. The benefit would be multiple in that the state would reduce its exposure to managing forests directly and communities would benefit from the economic opportunities.

Furthermore, efficiency gains in the commercial plantations in the areas of breeding and planting, improved profit margins, and better returns on capital are not being effectively filtered down to local communities (Maphoto, 2012) and support for productivity improvements for these smallholder schemes would be of benefit to all.

A further challenge to the industry is that progress on land reform in the forestry sector has been reported by some to be sluggish with 28 out of 245 (11%) of land claims having been settled (Maphoto 2012); however, Peter (2017) reported that the success rate of such plantations after reform is around 95%. However, there is a data gap in the number of claims that have been settled in the plantation forestry industry recently. Regarding the B-BBEE industry Forest Charter, several outcomes are close to targets which support a more favourable view of transformation in the industry. In terms of ownership the forestry sector scores 9.75 points for a target of 20, for enterprise development 12.9 for a target of 20, and for socio-economic development 6.87 for a target of 5 (BUSA, 2017). However, results for employment equity (5.82 out of 15) and skills development (6.89 out of 15) are still low.

The aim of the Charter is to develop black ownership in the industry, support skills development and rural economic development, and empower local communities to take advantage of opportunities in plantation forestry. As evidenced by the data, the

plantation forestry industry remains concentrated and not as inclusive as it could be.

Plantation forestry in South Africa is listed as a stream flow reduction activity under the National Water Act of 1998 (NWA), the only industry classified like this. Most plantations, however, do not possess water use licences as the NWA allows for continued lawful water use under the condition of “existing water use”. Nevertheless, new afforestation requires licensing, and stands left unplanted between rotations also require a water use licence for operations to resume.

The process of obtaining a water use licence is lengthy and establishing new afforestation requires a comprehensive environmental impact assessment before land can be appropriated for plantation forests. This “onerous and lengthy” process of water licensing may take up to two years and burdens existing plantations, which leave fields unplanted, and future expansionary opportunities in plantation forestry in South Africa going forward (Ledger, 2017).

The NWA was meant to regularise existing water use on plantation forests, but this process is still ongoing between industry the DWS. Consequently, the NWA was ineffective at formalising the use of water in forestry and is a barrier to expansion. This is because new afforestation must be shown to be suitable for establishing plantation forestry. This is important because regulation is supposed to ensure that the industry will remain sustainable and that inputs are used optimally.

## CONCLUSION

As evidenced by the decrease in production output of industrial timber and the declining coverage in plantation forestry efficiency, gains in the MAI have not been able to match demand. Certain constraints have been identified that are preventing the industry from expanding. These include inefficiencies in downstream processing (i.e. sawmilling) of industrial timber, land rights issues, the dereliction of state-owned plantation land, water licensing constraints and delays. These constraints hinder exploitation of the opportunities that exist for employment and GDP expansion .

Consequently, there is low-hanging fruit for the industry, which can be obtained by alleviating the regulatory burdens through streamlining water licensing issues, resolving land rights issues, significantly expanding smallholder schemes, supporting efficiency gains in these

smallholder schemes and community plantations, prioritising public-private partnership and stakeholder engagement, and improving inefficiencies in downstream processing. If these barriers are unlocked then improvements in silvicultural practices and the MAI will reverberate through the value chain and the economy and promote expansion in downstream industries.

## RECOMMENDATIONS

- Given the skills and capabilities in FSC certification in South Africa, there is scope for this to be expanded to community plantations and smallholder schemes through an incentive structure or as part of the Charter activities. This could take place alongside silvicultural support for communities and smallholder farmers.
- Technology and equipment in downstream processing of industrial timber needs to be upgraded, especially in sawmilling to improve input efficiency. There is a clear role for industrial finance to support this.
- Inefficiencies in downstream processing operations using industrial timber as an input must be resolved. This will reduce the demand for timber and help promote longer rotation crops.
- Resolution of outstanding land claims in the plantation forestry industry as well as improved data availability is a priority.
- Effective use of DAFF plantations, in partnership with communities and small grower schemes, is a priority.
- A change in approach by DWS to water use licence applications for the forestry industry to allow for new plantations and alignment with empowerment of communities and smallholder farmers.
- Increased state-backed and/or facilitated financing opportunities for Environmental Impact Assessments.
- DAFF, in partnership with DWS, and other relevant national agencies (such as the South African Weather Service) could draft meteorological and topographical maps that pre-identify possible sites for new afforestation in the country and make provisions for water licensing and environmental impact assessments to be expedited for start-ups at these locations.

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